SECTION

3 OF 3

unit soil volume. Unless excavation is conducted in accord with the DOH approved PTREAU or HEPA Vacuum Truck (Guzzler) license, credit for abatement or limited disturbance shall not be taken without prior written approval by DOH.

The near-field monitoring system is not sufficient in itself to demonstrate compliance to the emission limits of the license (WAC 246-247-040 (1, 5, 6)).

8) The characterization and stabilization activities licensed are limited to emission units managed by DOE/RL within the 200 West and 200 East areas, and 212 N, 212 P, and 212 R. DOH shall be informed, and written DOH concurrence obtained, prior to initiation of stabilization activities at 212 N, 212 P, or 212 R (WAC 246-247-040(5)).

9) The characterization and stabilization activities licensed are limited to emission units listed in a compliance log maintained by a DOE central coordinator. The compliance log shall initially categorize each emission unit as low or high PTE on the basis of best available information. Low PTE is defined as 1.0 E-3 mrem/year or less, and high PTE is defined as greater than 1.0 E-3 mrem/year.

Stabilization activities shall not be initiated for high PTE emission units without written DOH approval. Stabilization of emission units having PTE greater than 0.1 mrem/year shall require the submittal of a separate notice of construction application.

Disturbance factors shall not be used in the determination of PTE except as by permission of DOH on a case-by-case basis. The WAC 246-247-030(21)(a) release fractions shall be assumed, except as may be approved otherwise on a case-by-case basis.

In the case of emission units in which the work activity may be effectively isolated from a significant fraction of the source material comprising the PTE, DOH will, on a case-by-case basis, consider a suitably defined and calculated PTE less than that for the whole emission unit. "Effectively isolated" may but does not necessarily imply physical barriers. E-mail approval of such cases is required prior to use.

Emission units may be added to the compliance log, provided DOH is given the new compliance log entry in writing (e-mail is sufficient). (WAC 246-247-040(5))

10) The compliance log shall list estimated or measured actual calendar year emissions for each emission unit on which stabilization activities have commenced. Additionally, the compliance log shall provide a total project actual emission for the calendar year (WAC 246-247-040(5)).

11) An initial copy of the compliance log shall be formally transmitted to DOH by June 30 or prior to initiating any activities under the license, whichever comes first. This initial transmittal shall provide all log information available by the time of submittal, and shall also include a projected list of emission units to be addressed under the license during the next 12 months. Following the date of the first transmittal, and by June 30 of each year, a copy of the previous calendar year compliance log shall be formally transmitted to DOH, along with a projected list of emission units to be addressed under the license during the next 12 months. The log shall be available for DOH inspection (WAC 246-247-040(5)).

12) Characterization means entry and radiological/industrial/chemical characterization activities, not to include activities defined as stabilization below. The license allows characterization of low and high PTE emission units. Characterization is expected to improve the accuracy with which the PTE is estimated for a particular emission unit. Characterization data shall be documented to confirm the initial categorization:
a. Characterization data may require the upgrading of a particular emission unit from low to high PTE. DOH shall then be informed, and written DOH concurrence to proceed to stabilization shall be required (email is adequate).
b. Characterization data may allow the downgrading of a particular emission unit from high to low PTE. DOH shall then be informed (e-mail). The basis for the downgrading shall be provided to DOH as part of this information.
c. Characterization activities shall be conducted in accord with the ALARA principle. (WAC 246-247-040(5))

13) Stabilization means the size reduction, packaging/removal or fixing of whatever contamination or radioactive material may be removed or fixed without altering the existing emission unit structure or environmental containment function. Stabilization is not to proceed without first obtaining characterization data as above.

a. Stabilization activities shall be conducted in accord with the ALARA principle.
b. Monitoring and documentation sufficient to demonstrate compliance shall be maintained.
c. Disposition and transportation of removed material shall be in accord with applicable regulations.

(WAC 246-247-040(5))

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.32E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 3.32E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Site preparation for the retrieval of the waste from single-shell tanks. This covers the following activities as described below.

Installation of the following in-tank equipment

- Waste distribution devices
- Transfer pumps
- Enraf-Nonius Series 854 (ENRAF) stilling wells
- Video cameras
- Instrument manifolds
- Central fury device
- Drain lines back to tank
- AMS (Articulated Mast System)
- Sluicing nozzles
- Ventilation inlet filter assemblies
- Connection of hose-in-hose transfer lines (HIHTL)
- New pit cover-plates
- Electrical poser and instrument cables and other utility tie-ins and/or upgrades
- New above ground pits
- Jumpers
- Off riser sampling system
- Mobile Arm Retrieval System (MARS)

Removal, Decontamination and Disposal of Existing Equipment

- Remove/Replacement of Breather filters
- Removal of Sludge weights
- Removal of Liquid observation wells (LOW)
- Removal of Standard Hydrogen Monitoring System (SHMS) probe
- Removal of Thermocouple probes
- Removal of Sluicing nozzles
- Removal of Video cameras
- Removal of Liquid level reel
- Removal of Jumpers from pits
- Removal of Saltwell pumps
- Removal of Sluice pumps
- Removal of Corrosion probes
- Removal of Shield plugs
- Removal of Slurry distributors
- Removal of Air lift circulators
- Removal of Riser adapter cover plates
- Removal of Saltwell screens
- Removal of Dip tubes
- Removal of Protective foam coating on pits

Other similar equipment may be installed or removed provided all conditions and limitations outlined in this approval are met.

Pit Work

Pits will be accessed for installation of instrument manifolds, transfer pump installation, jumper removal, replacement of existing HIHTLs with new HIHTLs, connection of high efficiency particulate air (HEPA) filters, exhauster trunk for the portable exhausters, and removal of various jumpers, isolation of transfer lines, water lines, and drain lines.

Removal of In-Tank Equipment

Various in-tank equipment, such as those listed above, will be removed from the tanks to make room for the waste retrieval equipment, or to be replaced with equivalent equipment built to withstand the forces of waste retrieval.

In-Tank Equipment Installation

Motor controlled spray devices and sluicers will be inserted into risers on some tanks near the outside perimeter of the tank and an automatic indexing spray device also will be installed on a centrally located riser. In-tank closed circuit television cameras will be installed into risers and connected to a master camera control system skid. This equipment will be in the riser for the duration of the project and will not contact the waste. Each spray assembly is equipped with a spray washer to provide a decontamination rinse during removal. The spray devices and cameras will be sleeved out of the risers at completion of the project.

An AMS will be installed through risers of some tanks for use during retrieval. The AMS may be removed and reused. Pumps and In Tank Vehicles (ITVs) will be waste contacting and may be abandoned in place following the conclusion of retrieval operations.
Ventilation inlet filter assemblies (breather filters) will be installed on those tanks whose breather filters have been removed to accommodate portable exhausters and other retrieval equipment.

Installation of the Off-Riser Sample Collection System (ORSS). The ORSS consists of a sample collector sub-system and its deployment sub-system. The sample collector is capable of sampling the various types of waste expected in a post-retrieval single shell tank environment. The waste may be liquid in an extreme range of viscosities, or solids in various states of friability. The sample collector crawler will return the sample to sample containers staged below the riser, where it will be retrieved into the glove bag mounted on the sampling riser. Monitoring of the sample collector will be accomplished visually using the in-tank camera. All activities associated with the ORSS will be accomplished thru a sealed glove bag. The riser used for sampling will be open to the atmosphere for a very short period of time (typically less than one minute) while installing and removing the glove bag.

Installation of new risers. Riser will be installed by first removing soil down to the concrete tank dome surface using hand digging and/or using the guzzler. A steel caisson will be inserted into the hole for wall support. A small layer of grout will be added to the bottom of the hole to provide a level surface. A hole will be partially drilled into the concrete. After a cable is attached to the core, the drilling will be completed through the dome into the tank headspace. The new prefabricated riser will be lowered into the caisson until support brackets on the side are seated on the grout top.

The MARS will be installed through risers for use during retrieval. The MARS may be removed and reused after use.

Tank Preparation for Closure

Tank preparation for closure will include installation of equipment for introducing fill material, fill placement monitoring, and ventilation. In general, equipment residing in risers (e.g., pump, thermocouple tree, vacuum retrieval mast, etc.) will not be removed from the tank unless it obstructs a riser that is required to gain access for placing the fill material. Equipment obstructing a riser needed for access will be either removed, or cut and lowered into the tank. Equipment lowered into the tank during tank preparation will be completely covered when

the fill material is added to the tank.

Soil Excavation

Soil will be excavated inside and outside the farms for various reasons such as tie in of instrumentation and power systems for monitoring transfer progress. Intermittent trenches will be excavated for this purpose.

The volume of soil removed during excavation activities are volumes of disturbed soil that will not leave the respective farms. Clean soil piles may be moved from one place to another within the tank farm with heavy equipment (i.e. backhoe, front loader). The soil will be used to fill the trenches after the hose and the conduits are installed.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	2.15E-02	Am - 241	6.96E+00	Am - 243	2.13E-04
Ba - 137 m	3.69E+02	C - 14	1.55E-02	Cd - 113 m	1.03E+00
Cm - 242	6.88E-03	Cm - 243	4.11E-04	Cm - 244	1.15E-02
Co - 60	9.80E-01	Cs - 134	5.25E-02	Cs - 137	3.90E+02
Eu - 152	8.00E-02	Eu - 154	8.19E+00	Eu - 155	5.80E+00
H - 3	5.63E-02	I - 129	3.40E-04	Nb - 93 m	2.76E-01
Ni - 59	7.68E-02	Ni - 63	7.31E+00	Np - 237	8.68E-04
Pa - 231	4.72E-02	Pu - 238	3.62E-01	Pu - 239	7.53E+00
Pu - 240	1.15E+00	Pu - 241	6.14E+00	Pu - 242	3.28E-05
Ra - 226	7.62E-01	Ra - 228	4.47E-03	Ru - 106	2.59E-05
Sb - 125	1.40E+00	Se - 79	3.70E-03	Sm - 151	2.57E+02
Sn - 126	4.55E-02	Sr - 90	1.62E+04	Tc - 99	6.85E-01
Th - 229	7.52E-02	Th - 232	1.10E-03	U - 232	3.81E-03
U - 233	8.16E-02	U - 234	1.17E-02	U - 235	5.01E-04
U - 236	2.03E-04	U - 238	1.20E-02	Y - 90	1.62E+04
Zr - 93	3.34E-01				

4) During penetration of the tank dome, core drilling activities will take place within plastic sleeving. When the cylinder core is removed it shall remain contained within the plastic sleeving, and plastic sleeving shall remain over the existing hole in the tank dome until the new riser is installed.

5) Riser installation activities shall cease when sustained winds exceed 25 miles per hour. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, provided the reading is taken in an unobstructed location that is representative of the work area. Use of a local device and the measured wind speed reading taken from it must be documented in the JCS Work Records.

6) Soil excavation activities shall be performed in accordance with the requirements of TWRS ALARACT Demonstration 5 "Demonstration for soil excavation (using hand tools)".

7) The Annual Possession Quantity for pit entries, equipment removal activities, soil excavation, and Guzzler

operation shall be tracked on a WDOH approved log.

8) Work involved with pits and in-tank equipment installation and removal shall follow the requirements of TWRS ALARACT Demonstrations 1, 3, 4, 6, 7, 10, 11, 12, 13, 14, 15, and 16.

9) The Department shall be notified, within 7 days, of when an existing breather filter is replaced by a Flanders 40 cfm radial filter.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The operation of the waste retrieval system(s) for the removal of radioactive wastes from all 149 Single Shell Tanks (SST) at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The saltcake dissolution waste retrieval system deployed in the SSTs is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped from the SST to a receiver tank, staging tank, storage DST or other staging/storage vessel associated with the supplemental treatment, packaging or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUCING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some SST waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving Double Shell Tank, recirculated supernatant/water, chemical agent or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities in the (SSTs). The vacuum waste retrieval system is introduced into the SSTs by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel or a staging SST, storage DST, or other staging/storage vessels associated with supplemental treatment, packaging or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the SSTs. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B and 241-T Tank Farms a vacuum retrieval process tank, staging tank, staging SST, storage DST or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the SST being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some SSTs. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360 degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

The robotic crawler is equipped with a plow blade at the front for pushing/pulling wastes, a screw pump to jet wastes through a small nozzle towards the center of the tank, the ability to direct hot or cold water through the same nozzle to wash wastes off of in-tank equipment, dissolve waste agglomerations in the tank, and wash waste toward the center of the tank for removal.

Any new retrieval methods or changes to processes will need to be provided to WDOH in a revised NOC prior to implementation.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste from single-shell tanks (SSTs) and move the waste to the double-shell tanks (DSTs). The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non1eaker tanks and 2) a vacuum retrieval option is intended for retrieval of assumed 1eaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	5.99E+00	Am - 241	8.68E+03	Am - 243	3.39E-01
Ba - 137 m	4.62E+07	C - 14	6.25E+02	Cd - 113 m	4.95E+03
Cm - 242	1.97E+01	Cm - 243	1.80E+00	Cm - 244	1.90E+01
Co - 60	2.52E+03	Cs - 134	3.44E+04	Cs - 137	4.89E+07
Eu - 152	8.49E+02	Eu - 154	1.45E+04	Eu - 155	9.54E+03
H - 3	5.95E+03	I - 129	2.95E+01	Nb - 93 m	1.01E+03
Ni - 59	1.05E+02	Ni - 63	9.30E+03	Np - 237	9.50E+01
Pa - 231	1.25E+01	Pu - 238	1.65E+02	Pu - 239	3.17E+03
Pu - 240	5.36E+02	Pu - 241	4.80E+03	Pu - 242	3.34E-02
Ra - 226	1.27E-02	Ra - 228	1.15E+01	Ru - 106	1.22E-02
Sb - 125	1.73E+04	Se - 79	6.36E+01	Sm - 151	8.93E+05
Sn - 126	2.59E+02	Sr - 90	2.91E+06	Tc - 99	2.24E+04
Th - 229	4.20E-01	Th - 232	1.26E+00	U - 232	3.66E+00
U - 233	3.02E+01	U - 234	1.07E+01	U - 235	4.44E-01
U - 236	2.73E-01	U - 238	9.86E+00	Y - 90	2.91E+06
Zr - 93	1.25E+03				

4) Controls for retrieval activities in the 241-A, AX, B, BX, BY, C, S, SX, T, TX, TY, U single shell tank farms shall consist of at least a single breather filter. The breather filter shall be of an "Open Face" style housing, a "G-1" style housing, or a radial filter. Each "Open Face" or "G-1" style HEPA filter shall be tested in placed at least annually following the guidance of ASME AG-1 Section TA, and shall have a minimum efficiency of 99.95%. Radial filters are not tested in the field, rather they are tested at the manufacturer to 99.97% efficiency and are disposed of within a year of placement and replaced with a new a new radial filter.

5) During waste retrieval operations the maximum pressure for any waste retrieval method shall not exceed 37,000 psig.

6) Monitoring of breather filters during retrieval activities shall consist of weekly smear surveys on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Levels above 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha shall be reported to WDOH.

7) Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single shell tank due to structural concerns. The justification for structural concerns with the single shell tank shall be documented and provided to WDOH upon request.

8) The following ALARACTs shall be followed during retrieval activities, ALARACT 1 "Demonstration for riser preparation/opening", ALARACT 4 "Demonstration for packaging and transportation of waste", ALARACT 6 "Demonstration for Pit Access", ALARACT 11 "Demonstration for Waste Transfers", ALARACT 12 "Demonstration for Packaging and Transportation of Equipment and Vehicles", ALARACT 13 "Demonstration for installation, operation, and removal of tank equipment", ALARACT 14 "Tank Farm ALARACT Demonstration for Pit Work", ALARACT 15 "Demonstration for size reduction of waste equipment for disposal", ALARACT 16 "Demonstration for work on potentially contaminated ventilation system components", ALARACT 5 "Demonstration for Soil Excavation", ALARACT 7 "Demonstration for Tank Waste Grab Sampling", and ALARACT 10 "Demonstration for Water Lancing".

9) While an exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading.

10) An exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.50E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 7.35E+01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Liquid salt-solution received at the Demonstration Bulk Vitrification System (DBVS) from the 241-S-109 Single Shell Tank will be mixed with appropriate glass formers and excess water will be removed from the mixture. The mixture will be transported and distributed into a refractory-lined waste container, where electrodes, penetrating the waste mixture, will vitrify the waste via resistive heating. Preparation of the DBVS site could require excavation of up to 5,445 cubic feet of radioactively contaminated soil.

After completion of the vitrification process, soil and sand will be added to sufficiently fill the void container volume. The waste and waste container will undergo cooling, sampling, and external decontamination. The waste container with final vitrified waste will be allowed to cool, and will be stored at the Test and Demonstration Facility awaiting transfer to an approved storage facility or transferred to an approved onsite low-level burial ground.

The DBVS RD&D program will be operated in two phases. The Phase 1 DBVS will consist of treatment of up to three container loads, each incorporating up to 1135 L (300 gallons) of tank waste. Simulants (i.e., materials similar in chemical composition to tank waste) will be added to the waste load along with the glass formers to create a container load (including insulation materials) up to 54.4 m3 (1920 ft3). The containers will be stored at the Test and Demonstration Facility and ultimately be transferred to the IDF or another permitted disposal facility.

The goal of Phase 2 is to optimize the DBVS performance and operation for full-scale use. Phase 2 will consist of treatment of up to 50 (including containers from Phase I) container loads of waste totaling up to 1,355,500 L (300,000 gallons) of tank waste. Tank waste, process additives, and process control parameters will be varied to establish optimum operating process parameters or envelopes. It is anticipated that one container load of material will be vitrified weekly over one operating year.

The DBVS will receive Low Activity Waste (LAW) from Tank 241-S-109 into tanks for process feed, storage, and sampling. The tank capacities for the DBVS waste receipt are 18,000 gallons, and will be used in the production of up to 50 containers. The waste receipt tanks will be vented through the Off Gas Treatment System (OGTS). The 1,000 gallon staging tank used for receipt of waste for up to 3 batches will be passively ventilated through a HEPA filter.

Process Additives

The DBVS will receive soil, glass additives, container refractory sand, and other material necessary to the vitrification process. Soil will be used to form the matrix for the vitrification process. Vitrification aids such as graphite, boron, and zirconium can be used to initiate melting and increase glass performance (waste retention).

Waste Feed Preparation

Prior to starting the vitrification process, the waste feed material will be mixed with soil and additives and dried to approximately two percent moisture content. The mixer/dryer will be heated by steam from an onsite boiler. The dry material transfer system will be equipped with weigh stations to control the amount of material being added to the mixer/dryer. The design capacity of the mixer/dryer is 2,640 gallons (10,000 L) and the nominal cycle time is between six and eight hours. During the mixing/drying cycle the unit will be operated under a vacuum.

Vitrification Container Preparation

The waste containers will be a steel box approximately 10 feet high by 8 feet wide and 24 feet long. Prior to waste being added to the container the box will be lined with insulating board, sand, and a layer of castable refractory which will face the waste material. A layer of melt-initiating graphite and soil will be placed over the castable refractory in the bottom of the container. A steel lid with attached electrodes will be sealed to the box, using bolted flanges and a refractory gasket, prior to waste being added. The lid contains several ports for waste material addition, electrode connections, venting, sampling, and introduction of post-vitrification materials. All connections to the lid will be mechanically sealed. In addition the waste transfer connections will be equipped with shutoff valves to prevent spillage of material as the chute is attached to and removed from the port. Each connection port will be equipped with secondary containment and spilled material recovery provisions during material transfer, melting and cool down. The container-filling operation is performed under negative pressure and exhausted out the vent port to the OGTS.

In-Container Vitrification

The waste mixture from the mixer/dryer will be placed into the vitrification container through ports in the sealed box lid. Electrical power will be applied to the electrodes, vitrifying the container contents via resistive heating. Ambient air, filtered through a HEPA filter, is injected to cool the vitrification offgases and provide thermal protection for the sintered metal filters. Both "bottom-up" and "top-down" melting can be conducted during testing. Top-down melting is conducted by applying power to the electrodes only after all waste materials and process additives have been placed in the container. Bottom-up melting begins melting with a shallow layer of material in the container and continues as more material is added until the desired depth of melt is obtained.

Post-Vitrification Container Handling

After vitrification has been completed the container connection to the OGTS will be maintained, and clean fill materials will be added to fill cavities around the electrodes and cover the top of the vitrified waste to minimize headspace in the container. Sampling of the vitrified waste, radiation surveying, and external decontamination can be conducted after initial cooling has been completed. Sampling of the melt will be conducted as required by a coring process through a port in the side of the container. Temporary storage of up to 50 treated waste containers will be located at the Test and Demonstration Facility.

Offgas Treatment System

The offgas treatment for the DBVS operations will include the following:
Particulate and gaseous emissions from waste receipt;
Particulate emissions from process additive receipt, storage, and transfer;
Particulate and gaseous emissions from mixer/dryer;
Particulate and gaseous emissions from waste container filling and vitrification;
Particulate emissions from waste container topoff after vitrification.

Mixer/Dryer Offgass emissions will be partially treated for moisture removal using a glycol-cooled condenser and mist eliminator prior to being routed to the OGTS downstream of the venturi scrubber.

The Offgas Treatment System shall consist of two sintered metal filters in series, a quencher, venturi scrubber, and mist eliminator system. Dilute sodium hydroxide will be injected in both the quencher and venturi scrubber to reduce hydrogen chloride and other acid gas emissions. Scrubber offgases will pass through an additional condenser and mist eliminator, with drainage from those units routed to the scrubber recycle tanks. An offgas heater, two banks of HEPA filters (in series), and a carbon filter will follow the mist eliminator. A polishing filter will be installed downstream of the carbon filter. Based on results from Phase I a larger selective catalytic reduction unit can be added or an additional SCR unit added in series. An optional packed tower scrubber may be used.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.40E-03	Alpha - 0	6.87E-02	Am - 241	4.82E+00
Container Storage		Excavation		Container Storage	

Am - 243	1.37E-04	B/G - 0	4.24E+00	Ba - 137 m	2.23E+04
Container Storage		Excavation		Container Storage	
C - 14	3.76E+01	Cd - 113 m	8.88E+01	Cm - 242	9.18E-03
Container Storage		Container Storage		Container Storage	
Cm - 243	7.16E-04	Cm - 244	7.16E-03	Co - 60	2.10E+01
Container Storage		Container Storage		Container Storage	
Cs - 134	2.09E-01	Cs - 137	2.36E+04	Eu - 152	3.96E+00
Container Storage		Container Storage		Container Storage	
Eu - 154	9.65E+01	Eu - 155	7.95E+01	H - 3	1.09E+02
Container Storage		Container Storage		Container Storage	
I - 129	3.47E-01	Nb - 93 m	1.80E+01	Ni - 59	4.20E+00
Container Storage		Container Storage		Container Storage	
Ni - 63	3.89E+02	Np - 237	6.69E-01	Pa - 231	6.25E-03
Container Storage		Container Storage		Container Storage	
Pu - 238	1.48E-01	Pu - 239	7.26E+00	Pu - 240	1.11E+00
Container Storage		Container Storage		Container Storage	
Pu - 241	6.91E+00	Pu - 242	4.90E-05	Ra - 226	2.25E-04
Container Storage		Container Storage		Container Storage	
Ra - 228	6.78E-02	Ru - 106	7.24E-05	Sb - 125	3.98E+01
Container Storage		Container Storage		Container Storage	
Se - 79	5.02E-01	Sm - 151	1.68E+04	Sn - 126	3.04E+00
Container Storage		Container Storage		Container Storage	
Sr - 90	8.70E+03	Tc - 99	1.80E+02	Th - 229	1.77E-03
Container Storage		Container Storage		Container Storage	
Th - 232	6.60E-03	U - 232	1.03E-02	U - 233	4.21E-02
Container Storage		Container Storage		Container Storage	
U - 234	3.73E-02	U - 235	1.56E-03	U - 236	9.91E-04
Container Storage		Container Storage		Container Storage	
U - 238	3.54E-02	Y - 90	8.70E+03	Zr - 93	2.46E+01
Container Storage		Container Storage		Container Storage	

4) All filled waste containers maintained in waste container storage area shall have an installed NucFil HEPA filter (or equivalent), with a manufacturer certified removal efficiency of 99.97%.

5) Excavation of contaminated soil shall follow the requirements of ALARACT Demonstration 5, "Demonstration for Soil Excavation (Using Hand Tools)". Mechanical excavation using earth moving equipment is allowable and will follow controls equivalent to ALARACT 5. If underground equipment requires removal, the requirements of ALARACT 15 "Demonstration for Size Reduction of Waste Equipment for Disposal", shall be followed. WDOH shall be notified when equipment requiring removal is encountered.

6) The annual possession quantity for contaminated soil shall be tracked on a WDOH approved excavation log.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.28E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.75E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 241-AY-101, 241-AY-102, 241-AZ-101, and 241-AZ-102 tanks are double shell tanks. The inner shell is constructed from heat treated, stress-relieved steel. The outer shell is constructed of non stress relieved steel. The two shells are separated by a 2.5 ft annulus and contained inside a concrete shell. The tanks have a usable waste volume of approximately 1,001,000 gal.

The 241 AY and 241 AZ tanks are part of a Resource Conservation and Recovery Act treatment, storage, and/or disposal unit. The tanks contain mixed waste in the form of liquids or contained solids (suspended or settled). The contents in each of the four tanks may be mixed periodically to control gas entrapment in the settled solids, to control temperature, for chemical treatment to control corrosion, or for waste retrieval. Contained solids will be mobilized, as required, as part of this process by hydraulic action of the mixer pumps or by use of air-lift circulators in each of the tanks. During such activities, as well as during storage, the ventilation system maintains the vapor space in each tank below atmospheric pressure.

Airflow is from the tank to a glycol-cooled recirculation system and to a common header. The common header is the point in the overall system at which ventilation flow is provided to the emissions control system. Also, a portion of each tank's exhaust can be recirculated to assist in maintaining temperature.

The recirculation system cools, condenses, removes vapor and some entrained particulates, further removes moisture via a separator, and returns a portion of the cooled vapor to the tank. This provides cooling for the tank while reducing air emissions. Nominal flow rates in the recirculation system vary from zero m3/sec (bypassed) to 0.25 m3/sec per tank, at standard temperature and pressure conditions. At the higher flow rate, approximately 0.05 m3/sec is provided to the emission control system with the remainder to the tank. Similar airflow from the other three tanks is combined in the common ventilation header connecting the discharges of the other recirculation coolant systems. The combined flow is discharged to the emissions control system. The recirculation system is considered part of the process because the collected material is returned to the tank.

When mixer pumps are operating in a tank, the 0.25 m^3/sec drawn from this tank may not be recirculated but may be combined with the flow from the other tanks for a total discharge to the emissions control system flow range of 0.4 to 0.5 m^3/sec. Numerous other combinations of discharge flow rates are possible but the combined annual average discharge flow rate to the emissions control system will not be greater than 0.5 m^3/sec. During system upset conditions, such as an automatic shutdown of one exhaust train and start of the opposite train, discharge flow rates could reach 0.6 m^3/sec for several seconds.

The portion of the stream discharged to atmosphere will flow through a condenser, high-efficiency mist eliminator, heater, and two high-efficiency particulate air (HEPA) filters in series. For purposes of calculating abated emissions, only the HEPA filter control efficiencies are used.

The central pump pits on the 241-AY and 241-AZ Tank Farm tanks are approximately 14 ft long x 10 ft wide x 10 ft depth (outside dimensions). Sluice pits and annulus pump pits are somewhat smaller with outside dimensions of 7 ft x 7 ft x 10 ft deep and 5 ft x 5 ft x 10 ft deep.

With the previous NOC revision, modifications to all four tanks and associated equipment were permitted to allow for installation of waste retrieval systems and equipment, through issuance of letter AIR-05-708, including the following major components.

New In Tank Equipment
•Two mixer pumps each in tanks 241-AZ-102, 241-AY-101, and 241-AY-102 for mobilizing the settled solids. Two mixer pumps were installed in tank 241-AZ-101 and permitted previously by WDOH through issuance of AIR-98-708. All of the pumps will be capable of pumping waste through each of two horizontally opposed discharge nozzles.

•A riser extension/spray wash system on top of each of the risers used for mixer pumps. The spray wash system will be used for future decontamination of the mixer pumps if they are removed from the tank.

•One transfer pump in each tank for the transfer of waste.

•New temperature probes for each tank.

•New decant pumps in the AY tanks and associated transfer piping; to include a one-time use hose-in-hose transfer line approximately 40 ft in length.

Ancillary Equipment and Buildings
•Electrical power and instrument cables and other utility tie ins and/or upgrades (e.g., sanitary and raw water, and telecommunications).
•Tie-in to the existing dilution and caustic supply system to bring waste properties into compliance with the feed specifications and to flush and preheat transfer lines. The dilution system will have the capacity of providing approximately 140 gal/minute of pH adjusted water.
•Pit cover blocks.
•Water/diluent piping to and from the process pits.
•Process jumpers.
•Miscellaneous concrete pads for electrical and mechanical equipment.
•Chain link fencing and gates.

Removal, Repair, Decontamination, and Demolition of Existing Equipment
•Removal/repair of transfer and/or mixer pumps, as necessary, during the life of the facility.
•Removal and disposal of several thermocouple probes/instrument trees.
•Removal and disposal of several existing pumps and other miscellaneous equipment (e.g., slurry distributers and process jumpers).
•Additionally, this revision includes removal of HEGA filters.

CONSTRUCTION ACTIVITIES
Construction activities with the PTE could include soil excavation, work in pump pits, pipe cutting, and removal and installation of in tank equipment. Some of these activities are described in, and will be done in accordance with, an applicable tank farm as low as reasonably achievable control technology (ALARACT) demonstration (HNF 4327, Control of Airborne Radioactive Emissions for Frequently Performed TWRS Work Activities (ALARACT Demonstrations). The specific activities and corresponding ALARACT demonstration are called out as applicable in the following sections.

If needed or chosen for use during these activities, the regulated guzzler, a portable/temporary radioactive air emission unit, and a HEPA filtered vacuum radioactive air emission unit may be used in accordance with the latest revisions of the NOC [EPA 1998 letter, "Approval of Short Form Radioactive Air Emissions Notice of Construction (NOC) for Guzzler Excavation and Backfilling Activities in Support of 200 East Area A Farm Complex"; DOE/RL-96-75, "Radioactive Air Emissions Notice of Construction Portable/Temporary Radioactive Air Emission Units"; and DOE/RL-97-50, "Radioactive Air Emissions Notice of Construction for HEPA Filtered Vacuum Radioactive Air Emission Units," respectively].

Because of the possibility of encountering previously undetected subsurface contamination, all work will be performed in accordance with appropriate radiological controls and the River Protection Project (RPP) as low as reasonably achievable (ALARA) program. These requirements are carried out through work packages and associated Radiological Work Permits (RWP).

Soil Excavation

Soil will be excavated inside and outside the 241-AZ and 241-AY Tank Farms for the dilution piping that will tie-in to the existing AN Tank Farm caustic supply system and to remove soil in preparation for mixer pump foundations and miscellaneous equipment support structures, to remove soil around pits in preparation of core drilling, and for placement of control building foundations (as required). A total of approximately 6000 yd^3 per farm could be excavated. Backfill will be made with the original removed soil or noncontaminated controlled density fill (sand, water, and a small amount of cement).

Soil excavation activities inside the tank farm fence will be performed in accordance with ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools). If contamination is discovered outside the tank farm fence, ALARACT 5 will be followed. Clean soil piles could be moved from one place to another within the tank farm with heavy equipment (backhoe, front-end loader, etc.). Soil excavation outside the tank farm fence in noncontaminated soil also could be performed with heavy equipment. The regulated guzzler also could be used as described in the NOC for use in the 241-A Tank Farm Complex (EPA 1998 letter).

Pipe Cutting and Welding
Any required cuts of contaminated piping will be made inside a glove bag using appropriate equipment such as a sawzall or tri tool. To perform a cut without a glove bag, the piping will be surveyed/smeared to verify removable contamination levels are equal to or less than 10,000 disintegrations per minute (dpm) per 100 cm^2 beta gamma and 200 dpm/100 cm^2 alpha.

Welding may be necessary to join various pieces of equipment. If this is necessary, welding will commence once removable contamination levels in the weld area are reduced to ALARA. The goal will be to achieve 1000 dpm/100 cm2 beta gamma and 20 dpm/100 cm^2 alpha or less, but might not always be attainable.

If needed or chosen for use during these activities, a portable/temporary radioactive air emission unit and a HEPA filtered vacuum radioactive air emission unit could be used in accordance with the latest revisions of the NOCs (DOE/RL-96-75 and DOE/RL-97-50, respectively).

Pit Work
Work to be performed in pits may include replacing existing sets of cover blocks with newly designed cover blocks, core drilling (equivalent of one hundred 14-in. diameter holes for AZ Farm and ten 14 in. diameter holes for AY Farm), installing new nozzles, and removing existing jumpers.

Pit access and work will be performed in accordance with ALARACT Demonstrations 6 and 14, TWRS ALARACT Demonstration for Pit Access, and TWRS ALARACT Demonstration for Pit Work. Activities not covered in these ALARACTs are described in the following.

If needed or chosen for use during these activities, a portable/temporary radioactive air emission unit and HEPA filtered vacuum radioactive air emission unit could be used in accordance with the latest revisions of their NOCs (DOE/RL-96-75 and DOE/RL-97-50, respectively).

At the start of the pit work, the cover blocks will be lifted off and radiologically surveyed to determine an appropriate disposal method. New cover blocks will be installed when all work in the pits is completed.

Core drilling may be performed and will occur below grade level on the outside of the pit. The hole will be drilled from the outside to the inside, with the temporary pit cover in place. Nozzle installation generally will proceed immediately after the hole is completed. If immediate nozzle installation is not possible, the hole will be temporarily sealed with a plug, tape, or equivalent device until the nozzle can be installed.

Installation of new nozzles in existing pits will take place in an open pit. All parts of the nozzle will be assembled ahead of time and will be lowered into position as a single unit. The piping in the back of the nozzle will be threaded through the hole (from the inside of the pit to the outside) and pulled tight into place from the outside of the pit. Grout will be used to secure and seal the nozzle into place. The front opening of the nozzle, inside the pit, will be fitted with a temporary cap/seal until a jumper is connected to the nozzle. Once the nozzle(s) is/are installed, the temporary pit cover will be replaced until other work inside the pit requires pit cover removal.

Removal of In Tank Equipment
Various in-tank equipment will be removed from the tanks to make room for the waste retrieval equipment, or to be replaced with equivalent equipment built to withstand the mixer pump jet forces. Removed long-length equipment will either be packaged in long-length contaminated equipment disposal containers or size reduced for disposal in accordance with ALARACT Demonstration 15, Tank Farm ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal. Equipment removal will be performed in accordance with ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment. Activities not covered in this ALARACT are described in the following.

If needed or chosen for use during these activities, a portable/temporary radioactive air emission unit, and a HEPA filtered vacuum radioactive air emission unit may be used in accordance with the latest revisions of their NOCs (DOE/RL-96-75 and DOE/RL-97-50, respectively).

Decontamination of removed equipment is not anticipated. The fewer decontamination activities undertaken, the less exposure possibilities there are to the worker and the environment. Contingency decontamination plans, however, are in place if needed. The most likely equipment to be decontaminated would be sections of the flexible receiver. Equipment removal will be performed in accordance with TWRS ALARACT Demonstration 13, Installation, Operation, and Removal of Tank Equipment.

In Tank Equipment Installation
Equipment installation will be performed in accordance with TWRS ALARACT Demonstration 13, Installation, Operation, and Removal of Tank Equipment.

WASTE STAGING AND RETRIEVAL PROCESS OVERVIEW
Mixer pumps will be operated to maintain waste uniformity during staging and to mix the waste for a period before and during transfer. As required by operational directives, mixer pumps will be operated until waste samples verify that adequate mixing has been achieved. Waste samples will be collected in accordance with TWRS ALARACT Demonstration 7, Tank Waste Grab Sampling. If dilution/conditioning is needed, the pH and temperature of the diluents will be adjusted by means of a caustic supply system. Once the waste is verified acceptable, the transfer lines will be preheated/flushed with water, and the waste transfer to the treatment facility will follow. After the transfer, the lines will be flushed again with water.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.32E-06	Alpha - 0	2.05E+00	Alpha - 0	8.28E-04
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Hand digging during soil excavations in AY/AZ Tank Farm. Assuming Am-241 as the conservative isotope.		Pit entry in AY/AZ Tank Farm. Assuming Am-241 as the conservative isotope.	
Am - 241	5.16E+00	Am - 243	2.70E-03	B/G - 0	2.56E+01
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Hand digging during soil excavations in AY/AZ Tank Farm. Assuming Sr-90 as the conservative isotope.	
B/G - 0	9.45E-04	Ba - 137 m	5.78E+02	C - 14	1.56E-03
Pit entry in AY/AZ Tank Farm. Assuming Sr-90 as the conservative isotope.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.	
Cd - 113 m	5.98E-02	Cm - 242	4.81E-03	Cm - 243	6.35E-04
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.	
Cm - 244	1.48E-02	Co - 60	1.52E-01	Cs - 134	1.56E-01
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.	
Cs - 137	6.13E+02	Eu - 152	6.25E-02	Eu - 154	2.40E+00
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.	
Eu - 155	1.99E+00	H - 3	1.28E-02	Nb - 93 m	2.98E-02
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.	
Ni - 59	7.90E-03				
Pipe cutting and equipment removal					

in AY/AZ Tank Farm.	Ni - 63 7.35E-01 Pipe cutting and equipment removal in AY/AZ Tank Farm.	Np - 237 2.67E-03 Pipe cutting and equipment removal in AY/AZ Tank Farm.
Pa - 231 1.18E-05 Pipe cutting and equipment removal in AY/AZ Tank Farm.	Pu - 238 3.07E-02 Pipe cutting and equipment removal in AY/AZ Tank Farm.	Pu - 239 3.73E-01 Pipe cutting and equipment removal in AY/AZ Tank Farm.
Pu - 240 9.83E-02 Pipe cutting and equipment removal in AY/AZ Tank Farm.	Pu - 241 1.51E+00 Pipe cutting and equipment removal in AY/AZ Tank Farm.	Pu - 242 1.05E-05 Pipe cutting and equipment removal in AY/AZ Tank Farm.
Ra - 226 4.58E-08 Pipe cutting and equipment removal in AY/AZ Tank Farm.	Ra - 228 1.34E-05 Pipe cutting and equipment removal in AY/AZ Tank Farm.	Ru - 106 1.03E-02 Pipe cutting and equipment removal in AY/AZ Tank Farm.
Sb - 125 5.76E-01 Pipe cutting and equipment removal in AY/AZ Tank Farm.	Se - 79 4.84E-05 Pipe cutting and equipment removal in AY/AZ Tank Farm.	Sm - 151 5.61E+01 Pipe cutting and equipment removal in AY/AZ Tank Farm.
Sn - 126 2.53E-03 Pipe cutting and equipment removal in AY/AZ Tank Farm.	Sr - 90 1.21E+03 Pipe cutting and equipment removal in AY/AZ Tank Farm.	Tc - 99 1.37E-01 Pipe cutting and equipment removal in AY/AZ Tank Farm.
Th - 229 5.87E-08 Pipe cutting and equipment removal in AY/AZ Tank Farm.	Th - 232 1.30E-05 Pipe cutting and equipment removal in AY/AZ Tank Farm.	U - 232 1.22E-06 Pipe cutting and equipment removal in AY/AZ Tank Farm.
U - 233 6.13E-05 Pipe cutting and equipment removal in AY/AZ Tank Farm.	U - 234 3.25E-04 Pipe cutting and equipment removal in AY/AZ Tank Farm.	U - 235 1.31E-05 Pipe cutting and equipment removal in AY/AZ Tank Farm.
U - 236 2.28E-05 Pipe cutting and equipment removal in AY/AZ Tank Farm.	U - 238 2.57E-04 Pipe cutting and equipment removal in AY/AZ Tank Farm.	Y - 90 1.21E+03 Pipe cutting and equipment removal in AY/AZ Tank Farm.
Zr - 93 4.93E-02 Pipe cutting and equipment removal in AY/AZ Tank Farm.		

4) Soil Excavation

Soil excavation activities will be performed in accordance with ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools), and will follow the radiological controls specified in that ALARACT.

5) Pipe Cutting and Welding

Pipe cutting will be performed in a glove bag if the levels of removable contamination in the cut and weld area are greater than 10,000 dpm/100 cm^2 beta gamma and 200 dpm/100 cm^2 alpha. Health physics technician coverage will be provided. Although the key measure relied on to control air emissions during cutting will be the glove bag, measures such as expandable foam or fixatives might be applied on or around a pipe cut as an additional measure to help fix contamination. The decision to use expandable foam or fixatives will be made on a case-by-case basis after excavation exposes the pipe to be cut. When used, the expandable foam will help fix any contamination to the pipe wall in the area of the cut and will help prevent migration of contamination present in the pipe upstream or downstream of the cut.

If any welding is necessary to join pieces of equipment, welding will commence once removable contamination levels in the cut and weld area are reduced to ALARA. The goal will be to achieve 1000 dpm/100 cm^2 beta gamma and 20 dpm/100 cm^2 alpha or less..

Work in glove bags will not be performed if sustained wind speeds are greater than 30 miles per hour.

6) Pit Work

Pit access and work will be performed in accordance with ALARACT Demonstrations 6 and 14, TWRS ALARACT Demonstration for Pit Access and TWRS ALARACT Demonstration for Pit Work, and will follow the radiological controls specified in those ALARACTs. Controls not covered in these ALARACTs are described in the following.

All pit work will be performed in an appropriately configured confinement structure, as required by the applicable work package and its associated RWP, to maximize ALARA for contamination migration while allowing entry to perform the work. Health physics technician coverage will be provided during all pit work.

7) Removal and Installation of In Tank Equipment

Equipment removal and installation activities will be performed in accordance with ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment, and will follow the radiological controls specified in that ALARACT.

Removed long-length equipment will either be packaged in long-length contaminated equipment disposal containers or size reduced for disposal in accordance with ALARACT Demonstration 15, Tank Farm ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal.

8) MONITORING DURING CONSTRUCTION ACTIVITIES

During soil excavation activities, periodic confirmatory monitoring (PCM) as described in ALARACT 5, will verify low emissions. If the regulated guzzler is used, PCM will be performed as required by the guzzler NOC.

During pipe cutting activities surface contamination surveys will constitute the PCM to verify low emissions. If a portable/temporary radioactive air emission unit or a HEPA filtered vacuum radioactive air emission unit is used, PCM will be performed as required by these NOCs.

During pit work activities, PCM as described in ALARACT 14 will verify low emissions.

During in tank equipment removal and installation activities surface contamination surveys, as described in ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation and Removal of Tank Equipment (HNF-4327) will constitute the PCM to verify low emissions.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.60E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

This consolidated T-Plant license supersedes all radioactive air licenses for 291-T-1.

a. This approval subsumes those activities approved in three previous license approvals, retains/revises the specific conditions and limitations of those approvals, and replaces them as the radioactive air license for T-Plant:

i. AIR 03-1208 (NOC ID # 445, "Storage in T-Plant Complex of Sludge from K-Basins")
ii. AIR 01-1010 (NOC ID # 499, "T-Plant Complex Fuel Removal Project")
iii. AIR 02-704 (NOC ID # 500, "Entering and Characterizing of the 224-T Facility Process Cells")

b. With additional conditions and limitations provided herein, this approval also extends to new activities discussed in the NOC application "Radioactive Air Emissions Notice of Construction for Consolidated T Plant Operations", DOE/RL-2004-50, Rev. 0, September, 2004, described briefly:
i. Receipt, Storage, Treatment, and Load out of Contact-Handled and Remote-Handled Transuranic (TRU) and Transuranic Mixed Waste (M-91Initiative)
ii. Treatment (in addition to storage) of K-Basin Sludge from the North Load out Pit (NLOP)
iii. Such activities considered routine at T Plant as are described in succeeding conditions.

Activities a)i through a)iii may emit radioactive air through 291-T-1. Additionally, activity a)iii may emit to the 200 Areas Diffuse & Fugitive emission unit and to Portable Temporary Radioactive Air Emission Units.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.20E+02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.78E-04
Beta - 0	5.49E-05

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) A. Entry/Characterization of 224-T Process Cells:
A1) (Deleted)

A2) All work covered by this NOC must be completed by December 31, 2005.
A3) (Deleted)
A4) (Deleted)
A5) HPT coverage shall be provided during all cell entries and excavation activities.
A6) (Deleted)
A7) When a HEPA Filtered Vacuum Radioactive Air Emission Unit (HEPA VAC) is used, the conditions, controls, monitoring requirements and limitations of the latest approved revision of the HEPA VAC Notice of Construction shall be required.
A8) (Deleted)
A9) Approved activities for the Entry/Characterization of 224-T Process Cells are:
A9a) Approval extends to entry of the 224-T Facility to determine the condition and contents of the facility's cells, tanks, and vessels, as described below: A containment tent shall be erected outside each access door. The containment tent shall consist of two or more chambers, where the inner chamber shall surround the cell door and the outer chamber shall function as an airlock. Alpha and beta continuous air monitors (CAM) shall monitor each chamber and shall run continuously whenever the cell door is open. The inner chamber shall be fitted with a Type I portable temporary radioactive air emissions unit (PTRAEU) exhauster to provide air flow and contamination control in the containment tent. The exhauster shall be run intermittently to control radiological conditions, at the direction of the field work supervisor in collaboration with the health physics technician (HPT). The containment tent shall be isolated from the cell (door closed or otherwise blocked) before operating the exhauster. The Type I PTRAEU shall be used in accordance with the conditions, controls, monitoring requirements and limitations of the latest approved revision of the PTRAEU NOC (DOE/RL-96-75).
A9b) The following characterization activities are allowed in the cells and/or containment tent:
A9b1) Establishing radiological conditions/map (i.e., dose rates, smearable and fixed contamination, and airborne concentrations).
A9b2) Nondestructive data analyses (NDA) measurements of equipment.
A9b3) Collection of liquid and solid samples from open vessels, trenches, or sumps.
A9b4) Collection of ultrasonic data on vessels and piping.
A9b5) Taking photographs.
A9b6) Performing visual inspections.
A9b7) Removing flanges to collect samples from inside equipment or piping.
A9b8) Cutting or drilling into piping to collect samples with appropriate equipment such as a reciprocating saw, a circular saw, a hacksaw, a tri-tool, or an abrasive wheel.
A9b9) Minor decontamination activities such as wiping down, applying fixatives or sealants, etc., performed in the cell or in the containment tent.
A9b10) Decontamination to reduce dose rates or remove contamination for personnel safety, to remove characterization equipment brought in, or to remove incidental loose equipment or waste found in the cell.
A9b11) Size reduction and packaging and containerizing of incidental, loose equipment or waste found in the cell for removal and/or disposal.
A9b12) Removal of infiltrated water from the pit and the submerged tanks in C-Cell by pumping into tanker trucks for subsequent disposal.
A9b13) Characterization of the removed water prior to disposal.
A9b14) Investigation of the source of water infiltrated into C-Cell.
A9b15) Sealing and grouting of leaks causing water infiltration.
A9b16) A small amount of excavation is allowed to take place around the cell access doors to support installation of the containment tents. Manual digging methods with shovels, picks and rakes shall be used. Up to two cubic meters of contaminated soil may be disturbed.
A9b17) Within the containment tent, the weather barrier cover over the cell access door shall be removed. The integrity and functionality of the cell door shall be determined and as a result the door may be removed and replaced with another door. Any other physical barrier that limits access to the cell also shall be removed.
A9b18) (Deleted) (WAC 246-247-040(5))

5) Actions to assure quality of periodic confirmatory measurement shall be as follows:
(1) Implementation of quality checks supporting the periodic confirmatory measurements. These checks shall assure that the emissions measurements are sufficient to verify low emissions.
(2) (Deleted)
(3) An annual calibration will be performed on the existing sample flow meter or an annual function check will be performed if the flow meter is replaced by either a rotameter or a magnahelic gauge.

(4) The effluent samples will be collected on standard (very high efficiency particulate air) sample filters.
(5) The laboratory sample analysis will meet the requirements of Appendix B, Method 114(3); and
(6) The following items shall be documented in a NESHAP Quality Assurance Project Plan or other documents.
(i) The sample collection and analysis procedures used.
(ii) The quality control program for evaluating and tracking the quality of the periodic confirmatory measurement data against preset criteria. The quality control program should include, where applicable, a system of replicates, spiked samples, split samples, blanks and control charts. The number and frequency of such quality control checks shall be identified; and
(iii) The sample tracking system to provide positive identification of samples and data through all phases of the sample collection, analysis, and reporting system. Sample handling and preservation procedures to maintain the integrity of the samples during collection, storage, and analysis. (WAC 246-247-040(5))(WAC 246-247-075(3))(WAC 246-247-075(6))(WAC 246-247-075(13)).

6) After backfilling, the soil surface radiological contamination levels shall be verified to be less than 5,000 dpm/100 cm^2 beta/gamma and less than 100 dpm/100 cm^2 alpha. If contamination is present above these levels, the contaminated soil shall be removed and containerized for disposal or covered or fixed to provide containment of the contamination. (WAC 246-247-040(5))

7) All activities involving radioactive materials shall be conducted in accordance with radiation control procedures approved in accord with applicable QA program. (WAC 246-247-040(5))

8) Appropriate excavation controls such as water, fixatives, covers, or windscreens shall be applied, if needed, as determined by the contractor's Health Physics organization. Spoil piles containing contaminated soil shall be segregated from the clean soil. Containerizing soil for disposal may also be performed. (WAC 246-247-040(5)) (WAC 246-247-060(5))

9) If a Portable/Temporary Radioactive Air Emission Unit (PTRAEU) is used, the conditions, controls, monitoring requirements and limitations of the latest approved version of the PTRAEU Notice of Construction shall be required. (WAC 246-247-060(5)) (WAC 246-247-080(7))

10) Periodic confirmatory measurements (PCM) for the diffuse and fugitive emissions shall be performed and shall consist of the radiological surveys from the soil excavation activities. Compliance shall be demonstrated by showing that actual emissions are inherently less than the estimated emissions, which are based and calculated from the same contamination levels.

If a PTRAEU or a HEPA filtered vacuum radioactive air emission unit is used, PCM for emissions from those units shall be performed as required by the respective NOCs. (WAC 246-247-040(5)) (WAC 246-247-080(7))

11) The dose to the maximally exposed member of the public from unabated diffuse and fugitive emissions associated with excavation activities under this NOC shall not exceed 3.05E-03 mrem/year. For the purposes of dose estimation, gross beta air concentrations shall be conservatively assumed to consist entirely of Sr-90. Also for the purposes of dose estimation, gross alpha air concentrations associated with excavation under this NOC shall be conservatively assumed to consist entirely of Am-241. (WAC 246-247-040(5))

12) Total volume of contaminated soil disturbed in excavation for installation of containment tents shall not exceed two cubic meters. (WAC 246-247-040(5))

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.85E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 4.85E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The IDF will provide for disposal of two types of waste: LLW and MLLW. MLLW includes ILAW (WTP ILAW and Demonstration Bulk Vitrification System ILAW) and newly generated IDF operations waste.

MLLW and LLW cells in the IDF have equally sized ultimate capacities of 450,000 m3 (1.50x10+7 ft3) each, for the full IDF build out capacity of 900,000 m3 (3.18x10+7 ft3) (RPP 21633, "Preliminary Closure Plan for the Integrated Disposal Facility"). The IDF is expandable up to the full build out capacity. Expansion is dependant upon waste generation and waste generation forecasts. Leachate generation and associated management of the leachate are minimized by the expansion approach.

The forecasted volumes of MLLW from WTP ILAW and Demonstration Bulk Vitrification System vitrified ILAW waste processes were derived from ORP 11242, "River Protection Project System Plan" as follows:

•352,000 m3 (1.24x10+6 ft3) of ILAW packages

The remaining capacity will be used for the newly generated IDF operations waste and will act as a buffer for the two cells' overall capacity, should it be required. The estimate for the MLLW generated from operation of the IDF is unknown; however, based on engineering judgment, the yearly amount would not be significant. The 450,000 m3 (1.59x10+7 ft3) capacity of Cell 1 and associated ILAW volumes are listed as information only. This value is used as a bounding volume for calculating the ILAW radiological air emissions.

Low-level radioactive waste is not spent nuclear fuel, transuranic (TRU) waste, high-level radioactive waste, byproduct material (as defined in Section 11e (2) of the Atomic Energy Act of 1954), or naturally occurring radioactive material (DOE 435.1, Radioactive Waste Management). Both contact handle and remote-handle LLW will be disposed at the IDF.

LLW Category I: This waste contains radioactivity not classified as spent nuclear fuel, TRU waste, or high-level waste. LLW Category I waste also meets the radionuclide limits for Category I waste defined in HNF-EP-0063 Hanford Site Solid Waste Acceptance Criteria. This waste may be comprised of either contact-handle or remote-handle waste considered low-activity waste with very low concentrations of long-lived radionuclides.

LLW Category III: This waste also contains radioactivity not classified as spent nuclear fuel, TRU waste, or high-level waste. In addition, it exceeds the radionuclide limits for Category I waste and meets the Category III limits defined in HNF-EP-0063. This waste may be comprised of either contact-handle or remote-handle waste considered moderate-activity to high-activity waste with low to moderate concentrations of long-lived radionuclides, in stabilized form that minimizes subsistence for a period of 1,000 yrs.

MLLW is a dangerous, extremely hazardous, or acutely hazardous waste that contains LLW. Contact-handle MLLW has a dose rate equal to or less than 200 mrem/h and contains radioactivity not classified as spent nuclear fuel or TRU waste. Remote-handle MLLW has a dose rate greater than 200 mrem/h and contains radioactivity not classified as spent nuclear fuel, TRU waste, or high-level waste.

Newly generated IDF operations waste is potentially dangerous, mixed, or LLW generated from the operations of the IDF that could include, personal protective equipment, rags, waste material from the maintenance of

equipment or vehicles, and waste generated at the leachate waste treatment facility that is returned to the IDF for disposal.

The packages for waste shall meet applicable federal transportation regulations under Title 49, Code of Federal Regulations (49 CFR) container requirements for the hazard class/division of the waste, except that packaging for onsite transfers under an approved package-specific safety document might be allowed where cost or technical constraints make the use of a U.S. Department of Transportation (DOT) compliant package unfeasible. Outer containers shall be in good condition, with no visible cracks, holes, dents, bulges, pit or scale corrosion, or other damage that could compromise container integrity, in compliance with WAC 173-303, "Dangerous Waste Regulations." Minor external surface rust that can be sanded or brushed off will be acceptable. Containers having some pit or scale corrosion could be acceptable for storage provided the integrity of the container is confirmed.

MLLW generated from IDF operations will consist of 208 liter drums, medium boxes, small boxes, long equipment containers, and other containers. MLLW is defined as dangerous or hazardous waste in WAC 173-303, and therefore should be disposed in Cell 1.

LLW will be shipped primarily in 208 liter drums, 322 liter drums, other drums, MB-V boxes, medium boxes, small boxes, and other containers. LLW is not a dangerous or hazardous waste as defined in WAC 173-303, and therefore should be disposed in Cell 2. However, because the volume of remote-handle LLW is expected to be small, remote-handle LLW may be disposed in Cell 1 along with remote-handle MLLW. This would avoid the need to set up remote handling operations in both Cell 1 and Cell 2, and will provide greater flexibility for LLW disposal operations in Cell 2.

WTP – ILAW: MLLW includes the low-activity waste fraction of the Hanford Site tank waste that is immobilized in a glass matrix at the WTP.

Other ILAW Streams – Demonstration Bulk Vitrification System: MLLW that contains the low-activity fraction of the Hanford Site tank waste immobilized in a glass matrix is produced by the Demonstration Bulk Vitrification System.

ILAW Containers and Packaging: The ILAW package shall be compatible with crane lifting and movement. The package shall be equipped with lifting and other handling apparatus designed to allow safe lifting, movement, and stacking of the packages when fully loaded. The package shall maintain its integrity during handling, transportation, and lifting during disposal at the IDF.

The WTP ILAW packages are stainless steel cylinders that have been filled with vitrified low-activity waste, which is physically similar to molten glass, then sealed and cooled. These packages will be remote-handled. The Demonstration Bulk Vitrification System containers, also known as vitrification boxes, are filled with material similar to the material in the ILAW packages. The ILAW and Demonstration Bulk Vitrification System packages will be disposed in Cell 1.

The IDF consists of an expandable, lined landfill in a series of near-surface disposal cells that will be developed in phases located in the 200 East Area on the Hanford Site. The landfill will be divided lengthwise into two distinct cells, Cell 1 for disposal of MLLW and Cell 2 for disposal of LLW. The IDF is designed to provide an approved disposal facility for the permanent, environmentally safe disposition of ILAW, newly generated IDF operations waste and LLW that meets the environmental requirements and is approved by the DOE and the State of Washington, Department of Ecology (Ecology).

The IDF is designed for ILAW package transportation, receipt, unloading, emplacement in a disposal cell, and periodic backfill of the disposal cell. Also included are receipt, unloading, emplacement, and periodic backfill of Demonstration Bulk Vitrification System containers, newly generated IDF operations waste, and LLW from Hanford Site sources. In the initial phase of the IDF, the volume of remote-handle LLW is projected to be very small. Rather than set up a separate remote-handle operation for this small volume of LLW, remote-handle LLW may be placed in the cell with remote-handle MLLW.

Disposal cells are installed in a sequential manner and are aligned within the disposal site in a north-south orientation to minimize impact to the aquifer beneath the site. The cells have separate leachate collection,

handling, and storage systems to maintain waste separation.

Two cells will be constructed in the first phase of the IDF, Cell 1 (west half) and Cell 2 (east half). Each cell is approximately 3.2 hectares (8 ac) in size, and when fully developed, the completed IDF will occupy approximately 25 hectares (62 ac) Subsequent phase development of the IDF will connect to the southern edge of Cells 1 and 2 such that the bottom grades are continuous between cells.

Support facilities, such as changing rooms, a lunchroom, and offices, will be provided for IDF personnel. Changing facilities for male and female personnel will be furnished with lockers, showers, restroom facilities, benches, and both clean and dirty laundry storage. The building also will contain office space and a control room, and is planned to be a radiologically clean facility.

ILAW: The ILAW packages will be transported from the WTP and Demonstration Bulk Vitrification System to the IDF by the onsite, DOT compliant transportation system. The recommended mode of transport is a commercially available tractor/trailer combination capable of hauling ILAW packages in a DOT compliant, shielded overpack. The configuration required will depend on the total weight and weight distribution relative to the axles to insure the axle load limitations for roadway use are not exceeded.

LLW and MLLW: Various transport vehicles will be used to transport other wastes to the IDF. Commercially available tractor/trailer combinations typically will be used for LLW. LLW will be transported from various locations within the Hanford Site. Container sizes and shapes will vary but are expected to be mostly rectangular or drums of standard sizes. The timing and frequency of delivery to the IDF will vary, depending on operations and waste generation rates from the facilities where these wastes are generated. Transport to the IDF site for disposal will be coordinated with IDF transport operations to avoid conflicts or disruptions to IDF transport schedules, which will take precedence.

Upon arrival at the IDF, the loaded transporter will proceed through the disposal site gate and stop at the receiving station. The receiving station will be provided by the operations contractor.

At the receiving station, the shipping documents will be verified and the packages will be inspected. The operation concepts for the arrival activity will include:

The truck driver will present shipping documents to facility operations personnel at the receiving station. A shift supervisor or quality control inspector will verify that the shipping documents are acceptable.

After shipping documents are verified and the transporter passes inspection, the loaded transporter will be released to travel to the full trailer staging area for cooling, as needed.

Cool-Down Staging Area – ILAW: When the ILAW packages are received for transportation, they may still be at elevated temperatures. Because of possible elevated temperature, operations restrictions will be in place during transportation and prior to disposal in the IDF. Once the ILAW package is received at the IDF, the full trailer will be staged in a designated area within Cell 1 over the bottom liner in a place where trailer storage will not interfere with other IDF operations. This area will be moved from time to time, to avoid interference with the waste disposal operations.

ILAW: After the ILAW package has cooled sufficiently, the trailer will be moved to an appropriate unloading position in Cell 1. Once in position, a crawler crane will be used to move the ILAW package from the transportation container into the designated disposal location within the disposal cell.

Periodically, after emplacement of approximately 81 ILAW package, the crawler crane must move to a new unloading station. Void-fill operations will be performed by a mobile crane after the crawler crane moves to a new unloading position.

LLW and MLLW: Unloading and placement of remote-handle MLLW and LLW will be done using a crane. Unloading and placement of contact-handle MLLW and LLW will be done using a crane or other appropriate equipment.

General Waste Placement and Layer Construction Procedures: The IDF configuration is based on four layers with a uniform height of 3.3 m (10.8 ft) (2.3 m [7.5 ft] ILAW package plus 1 m [3.3 ft] operations layer). Waste containers other than the ILAW packages will be variable height and will be placed in the 3.3 m (10.8 ft) high layers to achieve best use of space. Containers may be stacked on top on each other within each layer if adequate soil cover is provided over the containers. Additional waste container stability analyses will have to be done by the operations contractor to verify waste placement and backfill stability for stacked containers. Containers that have a height greater than the 3.3 m (10.8 ft) layer height will be allowed to project out of the top of the layer. In such cases, it may be necessary to mound cover soil around the individual projecting containers to provide sufficient cover for shielding until they are completely covered by subsequent layers.

Because of the large area available for waste disposal in each cell, flexibility to relocate filling operations to another area within each cell will exist if an event occurs that causes operations to temporarily halt placement of ILAW packages or other waste containers at the current working position. This will allow waste container placement to continue while the situation that caused the operations to cease is resolved.

ILAW: Two basic configurations were developed. Both make use of ecology block shield walls to shield the crane operator from exposure to the ILAW packages, with one using a temporary shield wall and the other using a permanent shield wall. Both of the basic ILAW package configurations include two variations. One variation is a grid pack arrangement of the ILAW packages and the other variation is a tight pack arrangement.

Temporary Shield Wall Configuration: The ILAW package configurations that use a temporary shield wall will require that cover soil be placed over and around the ILAW packages prior to removing the shield wall. This soil cover will have to include the side of the ILAW packages facing the temporary shield wall so that after the wall is removed, the soil will provide the shielding for equipment operators and other operations personnel.

Permanent Shield Wall Configuration: By leaving the ecology block shield wall in place, the wide area between the ILAW packages and the shield wall for the cover soil to slope to the ground can be eliminated. The ILAW package configurations that use a permanent shield wall will allow ILAW packages to be placed up close to the wall, thereby making better use of the available space in the landfill.

Grid Pack and Tight Pack Arrangements: With the grid pack array, the ILAW packages will be placed in a close packed square arrangement. The grid pack array consists of four packages in the array, which is square in shape with a base dimension of slightly over 0.6 m (2 ft). With the tight pack array, the ILAW packages will be placed in a close packed triangular arrangement. The tight pack array consists of three packages in the array, which is triangular in shape with an altitude dimension of approximately 0.5 m (1.5 ft).

LLW and MLLW: Packaging emplacement configurations will depend on opening size and volume of interstitial spaces between LLW and any MLLW containers from IDF operations, and on configuration of the containers and the placement of the containers relative to one another. The placement of the containers will be carefully planned to efficiently pack the containers into the smallest volume possible, and to avoid large interstitial spaces.

The general approach to calculating backfill quantities uses a volume of fill to waste ratio of 1.5 to 1.

Radiation exposure assessment evaluations have determined that 0.5 m (1.5 ft) of soil cover placed over the ILAW packages with a crane prior to operation of equipment on the cover soil will provide adequate radiation shielding to equipment operators. The surface of the initial 0.5 m (1.5 ft) layer will be smoothed and leveled with a bulldozer to facilitate subsequent compaction and placement of the final lift.

After completion of the partial placement of the operations layer with the mobile crane, placement of the operations layer to the full 1 m (3.3 ft) depth will be completed using a loader, dump truck, bulldozer, and compactor. The specific movements and activities of earthmoving equipment will be based on disposal cell configuration plans and elevation monuments established prior to initiating a new layer.

Compaction of the initial 0.5 m (1.5 ft) of the operations layer and placement of the remainder of the operations layer will not take place in the active array in which packages are being placed. Rather, the remainder of operations layer placement will take place in the previous array of ILAW packages so that there will be a placed and partially covered array of ILAW packages in place to stabilize and support the bulldozer. In addition, compaction of the initial 0.5 m (1.5 ft) of operations layer should not take place until all the voids between the permanent shield wall and the ILAW packages have been filled, and the initial 0.5 m (1.5 ft) of the operations layer has been placed in the active array of ILAW packages to provide shielding from the ILAW packages for the bulldozer operator. Compaction of the first 0.5 m (1.5 ft) layer of cover soil placed by the mobile crane and smoothed by the dozer should be accomplished with a vibratory roller. The vibrations of the compactor will help to fill voids that may have occurred during interstitial space filling by promoting cover soil to flow into the voids. As cover soil is moved into the voids below, additional soil placement will be required to replace the migrating material. This material should be the same low moisture content, low fines content sand from the onsite soil source as that used for interstitial fill. The remaining thickness of cover fill, up to the full 1 m (3.3 ft) thickness, will be placed by a bulldozer operating on top of the layer and compacted with a vibratory roller. The soil for this upper layer should include a higher fines content of up to 25 percent, and should be placed and compacted at or slightly below optimum moisture content.

In general, the loader, which will be stationed at the soil stockpile, will fill a dump truck. The dump truck will deliver cover soil to a location near the package array to be covered. The bulldozer then will spread the soil over the package array to the full 1 m (3.3 ft) depth.

A water truck will be provided for compaction and dust control. The truck will be operated as needed to spray water for compaction and to suppress dust by driving to a location safe for the operator to spray water over the cover material being compacted. In addition to dust control and compaction within the trench, an operations dust control plan will be developed to cover other areas within the boundary of the IDF.

A temporary rain curtain may be used to control the amount of clean stormwater run-off that enters the leachate collection system. The rain curtain can be used in areas where no ILAW packages have been placed or in the areas where ILAW packages and the full 1 m (3.3 ft) operations layer have been placed. The rain curtain would be removed prior to placing additional waste in the area that it covered.

The Leachate Handling Systems shall be designed to segregate MLLW leachate generated in Cell 1 from the LLW leachate generated in Cell 2. The Leachate Handling System shall be designed to manage the leachate generated from a 25 year, 24 hour storm event collected over the entire footprint of the landfill.

The leachate handling system design shall also comply with the following technical requirements:

The landfill shall control water that contacts waste through physical barriers and collection through the leachate collection system. This system shall collect, pump, and store any water that migrated through the landfill and shall provide systems for loading leachate into transport trucks. Leachate meeting the treatment facility waste acceptance criteria shall be transported by truck for storage at the treatment facility. The leachate will then be transferred for treatment. Any leachate not meeting treatment facility waste acceptance criteria will be handled on a case-by-case basis and will be handled, stored, and disposed in accordance with federal and state regulations.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.50E+00	Am - 241	7.61E+05	Am - 243	1.39E+02
C - 14	2.08E+02	Cd - 113 m	9.64E+04	Cm - 242	5.22E+03
Cm - 243	2.33E+02	Cm - 244	3.05E+03	Co - 60	4.20E+05
Cs - 134	6.08E+06	Cs - 137	4.07E+06	Eu - 152	1.90E+04
Eu - 154	2.76E+06	Eu - 155	3.31E+06	H - 3	6.03E+05

I - 129	8.23E+02	Nb - 93 m	2.01E+04	Ni - 59	1.81E+03
Ni - 63	1.77E+05	Np - 237	8.16E+02	Pa - 231	5.98E+00
Pu - 238	1.23E+03	Pu - 239	4.34E+04	Pu - 240	6.12E+03
Pu - 241	2.40E+05	Pu - 242	7.69E-01	Ra - 226	1.52E+01
Ra - 228	4.77E+02	Ru - 106	1.18E+05	Sb - 125	2.93E+06
Se - 79	2.46E+03	Sm - 151	1.09E+07	Sn - 126	1.88E+03
Sr - 90	2.49E+07	Tc - 99	2.27E+05	Th - 229	5.14E+00
Th - 232	2.69E+01	U - 232	7.39E+02	U - 233	2.80E+03
U - 234	1.58E+03	U - 235	6.84E+01	U - 236	1.67E+01
U - 238	1.60E+03	Zr - 93	1.52E+04		

4) The following isotopes could be found in the Integrated Disposal Facility but will contribute less than 0.1 mrem/yr to the MEI, and represent less than 10% of the unabated PTE and less than 25% of the abated dose:

Ag-108m, Ag-110m, Am-242m, Ar-37, Ar-39, Ar-42
Au-195, Ba-133, Ba-140, Be-10, Be-7, Bi-207
Bk-247, Ca-41, Ca-45, Cd-109, Ce-141, Ce-144
Cf-249, Cf-250, Cf-251, Cf-252, Cl-36, Cm-245
Cm-246, Cm-247, Cm-248, Cm-250, Co-56, Co-57
Co-58, Cr-51, Cs-135, Cs-136, Es-254, Eu-150
Fe-55, Fe-59, Fe-60, Gd-152, Gd-153, Ge-68
Hf-175, Hf-181, Hg-203, I-125, K-40, Kr-85
Mn-54, Mo-93, Na-22, Nb-91, Nb-94, Nb-95
Nd-147, P-32, P-33, Pb-210, Pd-107, Pm-147
Po-210, Pu-236, Pu-244, Rb-83, Rb-84, Rb-86
Re-187, Ru-103, S-35, Sb-124, Sb-126, Sc-46
Se-75, Si-32, Sm-147, Sn-113, Sn-119m, Sn-121m
Sr-82, Sr-85, Sr-89, Ta-182, Te-121, Te-123
Te-125m, Te-127m, Te-129m, Th-228, Th-230, Th-234
Ti-44, Tl-204, Tm-170, V-49, W-185, Xe-131m
Y-88, Zn-65, Zr-95

5) All waste shall be containerized and disposed of in closed containers, if a vent is required it shall contain a filter with a minimum efficiency of 99.97% when tested with 0.3 micron particles.

6) The Annual Possession Quantity shall be tracked on a WDOH approved log.

7) Monthly radiological contamination surveys shall be conducted of the soil cover and perimeter of the pit to detect any spread of contamination. Any soil contamination detected shall be reported to WDOH.

8) Water shall be used for dust suppression during the use of mobile cranes, dozers, and vibratory rollers, during placement and compaction of the cover soil.

9) Fixatives shall be supplied to contaminated soils and debris that will be left inactive less than 24 hours at the end of the work operations if the sustained wind speed is predicted during the next work shift is predicted to be equal to or greater than 20 mph.

10) Fixatives shall be applied to any contaiminated soil and debris that will be inactive for more than 24 hours.

11) Prior to receipt of radioactive material in the IDF facility a list and location of the near-facility monitors shall be provided to WDOH for review and approval. Power for a co-located ambient air sampler shall be provided for WDOH use at a monitoring station of WDOH choice.

Project Title	Approval #	Date Approved	NOC_ID
Cleaning Radiologically Contaminated Vehicles	AIR 06-1065	10/5/2006	715

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.40E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

cleaning Radiologically Contaminated Vehicles (RCVs) and/or radiologically contaminated components (e.g., radiator) of an RCV. A portable, commercially available, high-pressure, water/steam cleaning unit could be deployed to the location of the RCV/component, or the RCV/component (after appropriate precautions to isolate and contain smearable contamination) could be moved to some other location in the 200 Areas plateau before cleaning. Cleaning may also involve brushing, scrubbing, or other manual methods conducted in a manner to minimize airborne dust.

A RCV/component could be isolated with an engineered shelter over a basin. The basin could be a collapsible liner for collection of waste water. The shelter could be a galvanized steel tube framework with arched trusses and covered with polyester sheeting. Alternatively, the activity could be conducted without a shelter over the basin (i.e., open air) with reasonable operational controls (e.g., directing water/steam cleaning stream downward, concentrating stream on RCVs or components, using lowest possible pressure settings) being implemented.

A portable high-pressure, commercially available, water/steam washing unit could be used to clean the RCV/component. Personnel would direct the cleaning stream to areas of localized areas of contamination on the RCV/component. The RCV/component would be surveyed intermittently (e.g., hand-held field instruments, swipes, or dried sample analysis [for alpha] as necessary) to determine level of remaining contamination. This process would be repeated until sufficient decontamination is achieved, as determined by Radiation Protection personnel, to allow the RCV/component to be returned to service (i.e., no smearable contamination remains, and a fixed contamination level of no greater than 0.5 millirem/hour dose rate).

After decontamination to appropriate levels, the RCV/component would be removed from the shelter, if used, and basin. The RCV/component could be returned to service, or if necessary, appropriately packaged and disposed. Contaminated waste materials resulting from the cleaning processes, including waste water, will be packaged appropriately using standard procedures and dispositioned to approved storage or disposal. Activities could include solidification of liquid waste (such as absorbing liquids in tanks, containers; low-temperature [i.e., less than 100 degrees Celsius] evaporation) and subsequent transfer to appropriate on- or off site treatment/disposal facilities.

The shelter (if used) and basin would be surveyed at the end of the cleaning process to ensure appropriate radiological controls are in place. The shelter/basin would be decontaminated appropriately and maintained for future cleaning activities. If necessary, the shelter/basin could be packaged and disposed.

High-efficiency particulate air (HEPA) -filtered vacuums or portable/temporary radionuclide air emission units (PTRAEUs) may be used to support the cleaning activities.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.40E-05 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.50E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Alpha release rate based on Am-241. Any radionuclide might be present in the RCV cleaning activities. Am-241 is representative of the alpha-emitting radionuclides present in/on the RCV/component and would be typical in the wastestream created.

B/G - 0	2.90E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/Gamma release based on Cs-137. Any radionuclide might be present in the RCV cleaning activities. Cs-137 is representative of the beta-gamma radionuclides present in/on the RCV/component and would be typical in the wastestream created.

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) If a portable/temporary radioactive air emission unit (PTRAEU) or HEPA filtered vacuum is used, controls as described in the sitewide NOC, i.e., DOE/RL-96-75 or DOE/RL-97-50, and in the associated license would be followed.

5) The cleaning operations shall be performed in accordance with the controls specified in a radiation work permit (RWP) and/or operating procedures.

6) All activities shall be conducted under the auspices of radiological control technicians. Routine field surveys, including swipes/smears, shall be conducted. Fixatives, covers, or other standard measures shall be used to contain contamination.

7) Appropriate spill prevention procedures shall be in place to minimize the probability of a release of radioactive liquid waste to the environment, and to provide immediate cleanup of any liquid spills.

8) Low risk radiological activities (i.e., less than or equal to 100,000 dpm/100 cm^2 beta-gamma and less than or equal to 2,000 dpm/100 cm^2 alpha) will be completed under this NOC implementing the following controls:

-- Pre and post-job surveys will be performed and maintained as records of low emissions.
-- A basin will be erected to contain radioactive contamination.
-- Splashguards will be installed to contain spray water, and ensure waste water is directed toward and collected in the basin.
-- All radioactive contamination removed during the decontamination process shall be contained, packaged, or disposed of within the same day.
-- The basin surfaces shall be maintained to less than 1,000 dpm/100 cm^2 beta-gamma and 20 dpm/100cm^2 alpha when not in use.

For those activities considered medium risk radiological activities (i.e., greater than 100,000 dpm/100 cm2 to less than or equal to 1,000,000 dpm/cm2 beta-gamma and greater than 2,000 dpm/100 cm2 to less than or equal to 20,000 dpm/cm2 alpha), DOE will contact WDOH to discuss the additional controls that will be implemented for limiting radiological air emissions.

This NOC will not be used for high risk radiological activities.

Project Title	Approval #	Date Approved	NOC_ID
Removal of Liquid from Catch Tank 241-ER-311	AIR 08-1106	11/10/2008	718

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.47E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.47E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The action will include the operation of a 500 cfm portable exhauster connected to a riser in conjunction with a inlet HEPA filter to remove evaporate liquid in the 241-ER-311 Catch Tank. A small volume of the liquid may be pumped out during this activity. There may also be an insertion of a sleeve inside the existing risers to direct air flow closer to the liquid surface.

During riser preparation controls will be established using as low as reasonably achievable control technology (ALARACT 1) "Demonstration for riser preparation/opening", ALARACT 4 "Demonstration for packaging and transportation of waste", ALARACT 6 "Demonstration for pit access", ALARACT 13 "Demonstration for installation, operation, and removal of tank equipment", ALARACT 14 "Demonstration for pit work", ALARACT 15 "Demonstration for size reduction of waste equipment for disposal", and ALARACT 16 "Demonstration for work on potentially contaminated ventilation system components".

A portable, 500 cfm ventilation system will be installed on a riser on the 241-ER-311 Catch Tank. The portable exhauster consists of a skid mounted air clean-up train, which includes a heater, a pre-filter, two HEPA filters in series, and a fan, prior to the stack. During exhauster operation air from the tank will be heated before passing through the pre-filter and two HEPA filters to ensure that condensation of air stream moisture is minimized through this section. Drains in each of the filter and heater housings allow entry condensed liquid to flow away from the components and to be collected in a seal pot for removal.

Ductwork will be used to connect the exhauster inlet to the tank riser. Ductwork will essentially be fabricated in conformance with ASME B31.3 Process Piping, and it will meet the requirements of ASME AG-1, Section SA, with the exceptions noted in RPP-1923, "General WAC 246-247 Technology Standards Exemption Justification for Waste Tank Ventilation Systems".

A 500 cfm inlet HEPA filter in an ASME AG-1 compliant housing will be installed on a second riser on the 241-ER-311 to accommodate the inlet air stream created by the use of the portable exhauster. When the exhauster is not running, the inlet HEPA filter will serve as a tank barometric breather filter to provide abatement of particulate emissions from the tank.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Am - 241	4.79E-04	Cs - 137	9.36E+00	Pu - 239/240	3.36E-04
Sr - 89/90	2.88E+00				

4) The following ALARACTs shall be followed during retrieval activities, ALARACT 1 "Demonstration for riser preparation/opening", ALARACT 4 "Demonstration for packaging and transportation of waste", ALARACT 6 "Demonstration for Pit Access", ALARACT 13 "Demonstration for installation, operation, and removal of tank equipment", ALARACT 14 "Tank Farm ALARACT Demonstration for Pit Work", ALARACT 15 "Demonstration for size reduction of waste equipment for disposal", ALARACT 16 "Demonstration for work on potentially contaminated ventilation system components".

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.44E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) Excavation and Retrieval of Containers (drums or boxes)
Work will be performed in accordance with as low as reasonably achievable (ALARA).

The specific steps or approach to uncovering the containers will vary according to the configuration of the trench to be uncovered, the proximity of nearby trenches or fences, the designated location of the spoils pile, the planned extent of the soil removal, and other similar considerations.

Work to be performed within the V notched trenches is similar to the ongoing TRU retrieval project, but much of it may be performed within a weather resistant structure(s) that will be relocatable along the trench. Weather enclosures are effectively used for similar remediation activities at other U.S. Department of Energy (DOE) sites and in general industrial use. The use of a weather resistant enclosure could allow a more effective recovery from events involving degraded containers and potential contamination spreads.

The overburden soil will be removed to expose the waste containers. Excavation equipment will be chosen to effectively remove soil and retrieve the waste containers while minimizing damage to the containers. Excavation activities will be monitored to identify contamination that might be present and to minimize emissions.

The most efficient methodology for removing the uncontaminated overburden from the containers will include the maximum use of conventional methods such as backhoes, front end loaders, mechanical brooms (boom mounted), or manual digging with shovels and similar hand tools. Hand tools predominantly may be used to excavate contaminated soil. High efficiency particulate air (HEPA) filtered vacuums may be used for soil excavation, and spot contamination in accordance with the HEPA filtered vacuum unit (HVU) NOC (DOE/RL 97 50, as amended). Within the V Notched trenches, it is more likely that the use of a vacuum to remove larger quantities of soil from the top surface of buried containers and soil materials in the interstices surrounding containers will be employed. Any use of the sitewide Guzzler® will be performed under the NOC applicable to the unit.

Excavation activities will be controlled closely. When the quantity of soil removed with heavy equipment has reached the logical end, hand tools, light equipment, or HVUs may be used to complete the soil removal operations and to access and remove the plastic and plywood materials (to be set aside for reuse or disposal) covering the containers.

The exposed containers will be visually inspected and surveyed for contamination. Abnormal drum conditions will be managed as follows: Contaminated containers will be decontaminated or overpacked as needed. Bulging or potentially pressurized containers will be vented. Retrieval activities will include appropriate disposition of small amounts of incidental contaminated soil (e.g., containerized or fixed in place). Larger areas of contamination could be fixed and the area posted as required by the Radiological Control organization for later disposition. Bulk transfer of contaminated soils for disposal in another trench also could occur. All containers will be inspected to verify integrity. The container inspection will consist of a visual examination to determine if there are significant corrosion, holes, dents or other visual deformities. All containers could be moved, turned, or otherwise relocated (manually or with powered equipment, slings, clamps, or appropriate rigging) to facilitate an adequate visual inspection.

Overpacking containers with minor defects (pinholes, corrosion) is routinely performed at the LLBG and CWC. Precautions will be provided to safely retrieve containers of questionable integrity. It is expected that 10 to 100 percent of the newly retrieved containers will require overpacking or some other form of confinement. Breached and heavily corroded containers will usually be overpacked before being relocated. However, if a breached or heavily corroded container can provide adequate confinement, it may be relocated to an area for overpacking. The overpacked containers will be managed according to the LLW (including

mixed waste) or TRU waste designation (TRU containers are those with TRU content greater than 100 nCi/g), established by records or assay.

After a container is inspected visually and the structural integrity established, the container, if unvented, will be staged for venting, or moved to another TSD unit for venting. Retrieved TRU waste containers in their staged configuration at the LLBG will be inspected for outwardly visible signs of corrosion or degradation (overpacking as needed).

Venting of Containers
All work will be performed in accordance with the applicable operating procedures, radiological control procedures, radiological work permit (RWPs) and ALARA requirements.

Experience at other DOE sites has shown a potential for flammable gases to be present in some containers. Therefore all containers will be evaluated and vented if needed even if not specifically designated as TRU containers.

The vent filters will continue to be installed in designated containers via one of the drum venting systems that ensures personnel and environmental protection. The methodology will require penetrating the container and inserting a vent. Penetration of the lid will be accomplished by either drilling through the lid or puncturing the lid with a filter dart (using Dart System). Container venting systems are described in the following text. Designated drums slated for venting will be vented with the MDVS, Catagorical DVS, or other venting methods (with prior approval of WDOH).

MDVS (Mobile Drum Venting System)
The MDVS is enclosed in a trailer containing system equipment allowing an operator to sample and/or vent the drum and install a NucFil® filter or equivalent. Potential emissions from MDVS operations are point source emissions. Bulging or potentially pressurized drums may be overpacked, placed in restraints and then vented.

The MDVS trailer may be equipped with a HEPA vacuum system to prevent contamination from exiting through any incidental gaps and to clean room air in the event of airborne contamination. These emissions will be accounted for with the sitewide HEPA Vacuum NOC. The system could be automatically activated when the continuous air monitor (CAM) alarms or it could be manually activated. The CAM and/or air sample results will be used to verify the PTE is within the limits of the sitewide HEPA vacuum NOC.

Dart System
The Dart System is a portable unit that clamps directly onto a drum, using a pneumatic driver remotely activated by wire or radio transmitter. This system penetrates the drum lid with minimal risk of contamination release to install a NucFil® filter with an aluminum bronze housing to prevent the possibility of sparking. Potential emissions from these operations will be considered diffuse and fugitive.

Catagorical DVS2 (Drum Venting System 2)
The DVS2 vent system, utilizing a pneumatic drill, is remotely actuated to vent the drum. After the drum is vented, a filter is hand-installed; the headspace of the drum is sampled and analyzed in the DVS2 via a sample port on the filter. The analysis process involves withdrawing a sample directly from the container head space through flexible tubing to a gas chromatograph (GC) for analysis. During analysis, the sample is heated up to 212°F (100°C) within the GC and subsequently allowed to cool to 70°F (21°C) or below before it is emitted to the atmosphere. Up to 150 of these samples are planned to be done per week per GC. No more than 9,000 drums per year will be analyzed by the combined HSGS units. Upon completion of analysis, the drum is staged in a designated area for diffusion. Glove bags may be used to contain potential contamination. A portable HEPA vacuum with a variable speed is connected to the HEPA filter on the glovebag and will be used for exhausting the glovebag. The vacuum will be operated during venting and for a short time following venting at a low flow. The vacuum may or may not be operated during the headspace analyses activities. Glovebags will also have ports to check for contamination or hazardous gases. As many as three venting assemblies will be installed in a weather enclosure such as a Conex box. Connections for the third assembly may be used with the TRU Retrieval Drum Restraint in the event of a bulged or high DE-Ci drum.

The DVS2 unit will be installed within an enclosure such as a Conex box or trailer, and within the CWC complex, with side doors that will open to accommodate loading and unloading the drums.

The HSGS analysis unit in the DVS2 will exhaust through the HEPA vacuum, although the vacuum may or may not be operating when the analysis is performed. A small percentage (0.5%) of the sample stream will be released as diffuse and fugitive.

Other Venting Methods
The venting of other containers, the majority being fiberglass reinforced plywood (FRP) boxes but could also be metal containers - hereafter referred to collectively as boxes, located in CWC and the LLBG may be done. Two venting systems for the boxes will be used. Both systems will be capable of mating to various sized boxes and will be capable of installing a Nucfil® filter or equivalent into the box headspace.

One type of vent system uses a steel plate held in place against the side of a box by a forklift as a blast shield for personnel protection in the event the container is pressurized. A rubber gasket will provide a seal between the steel plate and the box. A glove bag will then be attached to the steel plate and the box to provide for contamination control during the drilling of the box. The glove bag contains a HEPA-type filter for passive control of contaminated particulates that may escape from the box during the drilling operation. In the event contamination is encountered during filter installation, a HEPA vacuum would be connected for use only after the filter is installed. The HEPA vacuum would be subject to the sitewide HEPA vacuum NOC.

After the steel plate and glove bag are in place personnel will drill a pilot hole in the box, monitor for the presence of contamination and hazardous gases, and install a Nucfil® filter or equivalent. A time weighted release of 60 minutes per box is allowed for drilling and filter installation. These activities will be conducted through glove ports that are an integral part of the glove bag. The drilling will be done with non-sparking and cold drilling techniques. A static dissipating cleaner manufactured by STATICO ™ or equivalent will be used to decay electrostatic build up in the fiberglass during drilling.

A second type of vent system for FRP boxes may be used that is similar to the portable DVS operating at T Plant. There could be several of these units in use within the LLBG. A glove bag with HEPA-type filter is used but without the steel plate and the drilling will be done remotely. The drill assembly and motor and bit type will remain the same. The system uses a pneumatic cold drilling technique that utilizes remote activation. The FRP venting system is placed on the top or side of the box and held in place with straps or clamps throughout the drilling and filter installation operation. A static dissipating cleaner manufactured by STATICO™ or an equivalent will be used to decay electrostatic build up in the fiberglass during drilling. A time weighted release of 60 minutes per box is allowed for drilling and filter installation. After holes are drilled, Nucfil® filters or equivalent will be hand installed in the box using glove ports in the glovebag.

In the event contamination is encountered during the installation of a Nucfil® a HEPA vacuum would be connected for use only after the Nucfil® is installed. The HEPA vacuum would be subject to the sitewide HEPA vacuum NOC.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 9.01E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	3.00E-05	Solid	WAC 246-247-030(21)(e)
Release rate based on Am-241. Release rate for staging/handling vented containers. See Condition 5.			
Alpha - 0	1.43E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Alpha release rate based on Am-241. Release rate for installation of Nucfil filters using the Dart System. See Condition 4.			
Alpha - 0	1.00E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate based on Am-241. Release rate for excavation of soil (contamination detected). See condition 19.			
Alpha - 0	2.01E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate based on Am-241. Release rate for excavation of soil (Higher contamination level, controls required). See condition 19.			
Alpha - 0	2.81E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate based on Am-241. Release rate for excavation of soil (notification level). See condition 19.			

B/G - 0	2.14E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Beta/Gamma release rate based on Cs-137. Release rate for installation of Nucfil filters using the Dart System. See condition 4.

B/G - 0	4.50E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Release rate based on Cs-137. Release rate for staging/handling vented containers. See Condition 5.

B/G - 0	6.64E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/Gamma release rate based on Cs-137. Release rate for excavation of soil (contamination detected). See condition 19.

B/G - 0	1.33E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/Gamma release rate based on Cs-137. Release rate for excavation of soil (Higher contamination level, controls required). See condition 19.

B/G - 0	6.64E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/Gamma release rate based on Cs-137. Release rate for excavation of soil (notification level). See condition 19.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 243	Cf - 252	Cm - 244	Cs - 134
Cs - 137	Eu - 152	Eu - 154	Pu - 238	Pu - 239/240
Pu - 241	Sr - 90	U - 234	U - 235	U - 236
U - 238				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) A maximum of 1,000 containers/yr are approved to have installation of NucFil filters using the Dart System. The potential unabated release rate from using the Dart System for installation of NucFil filters is 1.4 E-4 Ci/yr americium-241 and 2.1 E-3 Ci/yr cesium-137 and is based on a release fraction of 1.0E-3 and a pressure release time of 1 hour. All of the emissions from a pressurized container are routed through the HEPA-type NucFil filter (certified 99.97% removal efficiency); therefore, the abated release rate is 4.8 E-8 Ci/yr americium-241 and 7.1 E-7 Ci/yr cesium-137. These alternative release fractions are approved for this emission unit. Emissions will be tracked as DE-Ci. An average of 53 DE-Ci is assumed with a maximum of 1.27 E-03 DE-Ci/yr unabated released from the staging and handling of vented containers.

5) A maximum of 12,000 vented containers of waste (including containers that are not designated as TRU waste, and those could be retrieved with vents in place) are approved to be retrieved per year. Once vented, the containers are allowed to be staged with the other retrieved containers for further handling, resulting in the staging/storage of a maximum of 12,000 vented containers per year at the LLBG. Using an release fraction of 2.00 E-09 for fugitive emissions from vented containers (as used in the WRAP NOC, DOE/RL-2000-34), the potential unabated release rate from the staging of vented containers is 3.0 E-05 Ci/yr alpha (americium-241) and 4.5 E-04 Ci/yr beta (cesium-137). These alternative release fractions are approved for this emission unit. Emissions will be tracked as DE-Ci. An average of 53 DE-Ci is assumed with a maximum of 1.27 E-03 DE-Ci/yr unabated released from the staging and handling of vented containers.

6) Additional monitoring for the diffuse and fugitive emissions will consist of radiological surveys from the soil excavation activities.

7) Both alpha and beta/gamma surveys shall be performed for all removable contamination surveys and for soil surveys (direct reading). Alpha surveys alone shall be performed for direct readings of container surfaces. Beta/gamma direct readings are influenced by container contents, so are not as useful and are not required.

8) Dust controls such as water, fixatives, covers, or windscreens will be applied, as determined by the Radiological Control organization.

9) Excavation activities will be stopped if contamination (other than spot contamination) with detection readings greater than 500,000 dpm/100 cm2 beta/gamma or greater than 28,000 dpm/100 cm2 alpha is encountered.

Excavation will not continue at that excavation site (but may proceed at other sites) until an internal review of the work and encountered conditions has been performed and an internal determination has been made that no threat to personnel safety or the environment exists, or until proper controls (i.e., removal and disposal, water, fixatives, or covers) have been put in place to mitigate any further potential for emissions; and the WDOH has been contacted and briefed of the situation.

10) For bulk transfer of contaminated soils, a backhoe or front-end loader may only be used when the surface of the material is wetted during the transfer process.

11) Health physics technician (HPT) coverage will be provided during the excavation activities, continuously when in close proximity to containers.

12) It is recognized that other radionuclides may be present in very limited quantities.

13) Manual methods or HVU will be used to excavate soil in close proximity to containers (after overburden is removed).

14) Operational limits for TRU retrieval (contamination levels) will be established in the activity work packages and associated RWPs. Fixatives or other controls will be employed if contamination levels (other than spot contamination) exceed 100,000 disintegrations per minute per 100 square centimeters (dpm/100 cm2) beta/gamma or exceed 2,000 dpm/100 cm2 alpha.

15) Spoil piles containing contaminated soil will be segregated from the clean soil and dust controls such as water, fixatives, or covers will be applied at the end of each shift or when sustained or predicted wind speeds are >20 mph. Containerizing spoils for disposal may be performed.

16) The department shall be notified within 24 hours of all drum vents that fail to be installed properly and smears show >2,000 dpm/100 cm^2 alpha or >100,000 dpm/100 cm^2 beta/gamma removable contamination when using the dart system (an example of a "failure" would be where the Dart is used in a thin or corroded spot where the dart punches a hole through the lid).

17) The potential unabated release rate from manual excavation is based on a release fraction of 1.0E-3.

18) The process for handling of abnormal containers as described in the application is approved as meeting ALARACT, and this process and associated records and procedures will be subject to inspection upon request by the department.

19) This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

TRU Waste Retrieval

Encountering contamination is expected during excavation; therefore, to determine a potential to emit if contamination is encountered, the administrative control points for contamination, as monitored by standard radiological field instrumentation, will be used to bound emissions based on current efficiencies of typical SWSD field contamination instruments. To determine the corresponding soil concentration in picocuries per grams of individual radionuclides, conversion factors, as developed in Soil Contamination Standards for Protection of Personnel (HNF 2418) were used. The average soil density was assumed to be 98 pounds per cubic foot. The beta gamma contributing radionuclides were assumed to be represented by cesium 137 and the alpha contributing radionuclides were assumed to be represented by americium 241 (predominant alpha contributing radionuclide in the soil is unknown; therefore, assumption of americium 241 will produce the most conservative dose consequence). The respective volumes of contaminated soil (i.e., 300 m^3, 3 m^3, and 0.3 m^3) at the three contamination levels are considered as released from manual excavation, using a release fraction of 1.0 E-3.

The potential unabated dose rate from manual excavation is 2.79 E-03 mrem/year. No credit is taken for abatement; therefore, the abated emissions are assumed as the unabated emissions. Although fixatives and similar controls would be employed for the higher contamination level and notification level contamination, no credit is being taken for abatement; therefore, the abated dose rate is the unabated dose rate.

20) This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Venting of Containers

All work shall be performed in accordance with the applicable radiological control procedures and ALARA requirements. These requirements are carried out through the procedures, activity work packages, and associated RWPs.

The vent filters will be installed in designated containers by using the Drum Venting System (DVS) and/or Dart System that ensures personnel and environmental protection. The methodology will require penetrating the container and inserting a vent. Penetration of the lid will be accomplished by either drilling through the lid with a filter assembly fitted with a short hollow drill bit (using DVS) or puncturing the lid with a filter dart (using Dart system). Either method will result in emissions being routed through a filter during the venting process.

Most drums slated for venting will be vented with the DVS, consisting of a trailer with a chamber allowing an operator to sample the drum and install a NucFil ® filter. Potential emissions from these operations are point source emissions.

Bulging or potentially pressurized drums will be evaluated to determine best method and location to vent (Dart-in place, Dart-relocate, or move to the DVS). The Dart System is a portable unit that straps directly onto a drum, using a pneumatic driver remotely activated by wire or radio transmitter. This system penetrates the drum lid to install a NucFil ® filter with an aluminum bronze housing to prevent the possibility of sparking. Potential emissions from these operations will be considered diffuse and fugitive. The same Dart System will be used to install sample ports, consisting of a closure set screw covering a septum for withdrawing a sample for HSGS, in containers with existing vents at the LLBG, CWC, WRAP, or T Plant Complex, without creating a new pathway for potential emissions.

21) WDOH will be notified per WAC 246-247-080(5) if a loss of containment occurs (dropping, spilling, puncturing a container, or otherwise encountering loss of integrity where contamination escapes containment), which exceeds 100,000 dpm/100 cm^2 beta/gamma or 2,000 dpm/100 cm^2 alpha removable contamination.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.55E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

All work will be performed in accordance with approved radiological control methods and as low as reasonably achievable (ALARA) program requirements. These requirements will be carried out through radiological control procedures.

The general physical processes associated with decontamination activities in the decontamination trailer will consist of the following:

On identification of the need for additional decontamination of personnel, affected individuals will be escorted to the decontamination trailer.

As appropriate, contaminated clothing, coverings, and/or articles will be removed, packaged, and dispositioned in accordance with applicable facility waste handling procedures.

Personnel decontamination processes might include various methods or a combination of cleaning agents (e.g., soap and water, pre-moistened towelettes, shaving cream-type foam decontamination agents for facial areas; removal of hair; and abrasive soaps for toughened skin surfaces [e.g., hands and feet]).

Spent decontamination solutions will be transferred from the holding tanks directly to a mobile disposal unit or containerized (e.g., packaged in absorbents in drums or placed in drums or carboys) and transported to existing facilities on the Hanford Site for disposal.

Periodic maintenance inspections of the decontamination trailer will be performed without use of containment or portable exhausters.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.55E-05 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	8.37E-04	Solid	WAC 246-247-030(21)(a)
Alpha release rate based on Am-241. Any radionuclide might be present Am-241 is representative of the alpha-emitting radionuclides present.			
Cs - 137	4.19E-03	Solid	WAC 246-247-030(21)(a)
Beta/Gamma release rate based on Cs-137. CS-137 is representative of the Beta/gamma-emitting radionuclides present..			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241 Cs - 137

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Periodic Confirmatory Measurements (PCM) for the diffuse and fugitive emissions shall be provided by the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

5) Emissions will be included in the overall fugitive and diffuse emission estimate for reporting purposes as part of the approved ambient air monitoring conducted at the Hanford Site perimeter.

Emission Unit ID: 498

200 W-296P047-001

296-P-47

This is a MAJOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 21.00 ft. 6.40 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 90 degrees Fahrenheit. 32 degrees Celsius.

Average Stack ExhaustVelocity: 80.68 ft/second. 24.59 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Heater	1	
	Demister	1	
	Prefilter	1	
	HEPA	2	2 HEPA filters in series
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114.	Each radionuclide that could contribute greater than 10 percent of the potential TEDE	Continuous

Sampling Requirements Record sample collected biweekly

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a skid/mobile type portable exhauster used to support tank farm operations, such as but not limited to, waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and operation support activities. The emission unit is a portable exhauster that operates intermittently.

This Emission Unit has 3 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Liquid Pumping and Enhanced Sluicing on Tank 241-C-106	AIR 06-1038	10/5/2006	683

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.55E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 4.67E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The following actions:

Step 1:

- Fix and/or remove contamination and blown in soil/debris in the 241-C-06B heel pit in accordance with ALARACT 4, ALARACT 6, ALARACT 14, and ALARACT 15.
- If necessary, a HEPA vacuum will be used in accordance with the sitewide NOC.

- Remove a heel pit pump out of riser R-13 in the 241-C-06B heel pit in accordance with ALARACT 1, ALARACT 4, ALARACT 6, ALARACT 13, ALARACT 14, ALARACT 15, and ALARACT 16.
- Place conduit in a trench in accordance with ALARACT 5.
- Remove a thermoucouple out of riser R-14 in accordance with ALARACT 1, ALARACT 4, ALARACT 6, ALARACT 13, ALARACT 14, ALARACT 15, and ALARACT 16.
- Install slurry pump for the sluicing operation in riser R-9, R-13 or R-14 in accordance with ALARACT 1, ALARACT 4, ALARACT 6, ALARACT 13, ALARACT 14, ALARACT 15 and ALARACT 16.

Step 2:

- Fix and/or remove any contamination and blown in soil/debris in the 241-C-06C sluice pit in accordance with ALARACT 4, ALARACT 6, ALARACT 14 and ALARACT 15.
- If necessary, a HEPA vacuum will be used per the sitewide NOC.
- Remove the old sluicer and install new sluicer equipment in the R-3 riser, if needed, in accordance with ALARACT 1, ALARACT 4, ALARACT 6, ALARACT 13, ALARACT 14, ALARACT 15 and ALARACT 16.

Step 3:

- Fix and/or remove any contamination and blown in soil/debris in the 241-C-06A pump pit in accordance with ALARACT 4, ALRACT 6, ALARACT 14 and ALARACT 15.
- If necessary, a HEPA vacuum will be used per the sitewide NOC.
- Remove the failed pump equipment out of R-9 and R-6 riser used for prior sluicing operation. in accordance with ALARACT 1, ALARACT 4, ALARACT 6, ALARACT 13, ALARACT 14, ALARACT 15 and ALARACT 16.
- Install new sluicer equipment in the R-6, R-7, R-5 or R-9 riser, if needed, with ALARACT 1, ALARACT 4, ALARACT 6, ALARACT 13, ALARACT 14, ALARACT 15 and ALARACT 16, or use the existing project W-320 sluicing nozzle.
- Place an in-tank closed circuit television camera or television monitoring system in riser R-1, R-7, R-8 and R-14 in accordance with ALARACT 1, ALARACT 4, ALARACT 6, ALARACT 13, ALARACT 14, ALARACT 15 and ALARACT 16.
- Install a new sluicer nozzle in R-7 or R-8 and remove an additional thermocouple in accordance with ALARACT 1, ALARACT 4, ALARACT 6, ALARACT 13, ALARACT 14, ALARACT 15 and ALARACT 16.

Step 4:

- Pump out remaining free liquid in the tank to the DST system through a pump installed in either riser R-9, R-13 or R-14 under passive ventilation in accordance with ALARACT 11.

Step 5: (applies only to the 296-P-47 emission unit)

- Sluice and pump the solids that become a slurry into the DST system using raw water (or recirculated 241-C-106 water) as the sluicing agent. This activity shall only be performed during operation of the 296-P-47 portable exhauster. The emission unit shall be sampled continuously with a shrouded probe. The sample location, shrouded probe assembly, transport line and sample collection shall be qualified in accordance with the requirements of ANSI N13.1-1999.

Step 6:

- After sluicing an "in tank vehicle" (ITV) could be used, if necessary, to collect the remaining tank contents to be slurried through the sluicing pump to bring the tank contents down to <360 cubic feet in volume. This activity shall only be performed during operation of the 296-P-45 portable exhauster. The ITV shall be installed through a riser in accordance with ALARACT 1 and ALARACT 13. The ITV will be used to push the remaining tank

material into the center of the tank to be pumped. The ITV shall not move faster than 2 mph. If big chunks of sludge need to be broken, the tracks or plow blade could be used to break up the material so it can be pumped. The "water cannon" on the ITV shall not be used in tank 241-C-106. Upon removal of the tank the ITV shall be decontaminated with in the tank using ultrasonic decontamination and then go through a spray ring.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	2.31E-03	Am - 241	2.25E+02	Am - 243	2.20E-03
Ba - 137 m	1.66E+04	C - 14	5.73E-02	Cd - 113 m	1.77E+01
Cm - 242	3.56E-01	Cm - 243	2.81E-02	Cm - 244	6.03E-01
Co - 60	1.40E+00	Cs - 134	7.07E-02	Cs - 137	1.75E+04
Eu - 152	3.28E+00	Eu - 154	2.67E+02	Eu - 155	1.89E+02
H - 3	1.55E+00	I - 129	1.70E-02	Nb - 93 m	1.28E+01
Ni - 59	6.53E+00	Ni - 63	6.08E+02	Np - 237	2.62E-01
Pa - 231	3.37E-03	Pu - 238	3.50E+00	Pu - 239	9.10E+01
Pu - 241	1.85E+02	Pu - 242	1.65E-03	Ra - 226	4.10E-04
Ra - 228	3.15E-05	Ru - 106	1.69E-05	Sb - 125	2.83E+00
Se - 79	2.88E-01	Sm - 151	1.19E+04	Sn - 126	2.14E+00
Sr - 90	2.82E+05	Tc - 99	3.14E+00	Th - 229	2.43E-05
Th - 232	2.54E-03	U - 232	5.40E-04	U - 233	2.18E-03
U - 234	4.31E-02	U - 235	1.84E-03	U - 236	7.66E-04
U - 238	4.40E-02	Y - 90	2.82E+05	Zr - 93	1.44E+01

4) All ductwork connecting the tank to the exhauster shall be pressure tested in accordance with the requirements of AG-1 Section SA.
5) Each HEPA filter shall be in-placed tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.
6) Monthly checks shall be performed on the exhaust duct to ensure there is no deterioration of the ductwork or leakage at the connections points.
7) The curie value for Pu-239 identified in the Annual Possession Quantity also includes contributions from Pu-240.
8) The emission unit hours of operation shall be tracked on a WDOH approved log and shall not exceed 2880 hours of operation.
9) The emission unit shall be operational during all sluicing activities.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.10E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.82E+01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Sump Intrusion Mitigation:

Sump intrusion mitigation is limited to cells 001, 002, 003, and 011 only. From time to time if intrusion of precipitation and snow melt gets into the sumps, the sumps will need to be pumped. In order to accommodate this, submersible pump assemblies will be installed in each of the four CR Vault Cells. The pump assemblies will be installed on top of existing 6 inch riser extensions on cells 001, 002, 003, and 011. Riser extensions may be installed, or replaced if necessary. These extensions will be installed and/or removed as follows:

- the pit covers will be removed,

- above grade piping will be cut and capped,

- leak detectors and two zip cords will be removed,

- the riser extensions will be installed and/or removed remotely from a platform over the pit, and

- a new pit cover will be installed.

The sumps will be pumped by connecting a transfer line to a ventilated tank or to the Tanker Truck permitted under AOP Emission Unit Number 888 and licensed under WDOH NOC ID Number 696. The transfer line will be a hose-in sleeve line. The other end of the transfer line will be attached to the pump assembly on the first CR Vault cell to be pumped. After the first cell is pumped, flush water will be added and pumped to flush the system. Then the hose will be relocated to the next cell's pump assembly. The process will be repeated until all the cells are pumped. The CR Vault breather filter will not be modified and will be open during pumping. After the pumping is complete, the transfer line and pumps will be removed and disposed of as mixed waste. The pit foam covering will also be replaced to prevent, or at best minimize intrusion of precipitation and snow melt.

A fixative shall be applied with the pit covers on. The fixatives shall be applied to pit surfaces through a port in the pit cover using a 'whirly' or by fogging. A hand held sprayer is used to apply fixatives within the pit when the pit cover is off.

Temporary power installation will be limited to meet the needs to support the work described in this NOC. Temporary installations can be removed when no longer needed.

General Controls for Sump Intrusion Mitigation:

The general controls for sump intrusion mitigation is limited to cells 001, 002, 003, and 011 only. The required controls for each of the following actions are delineated by the specified ALARACT:

- ALARACT 1—Tank Farm ALARACT Demonstration for Riser Preparation/Opening.

- ALARACT 4—Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste.

- ALARACT 5—Tank Farm ALARACT Demonstration for Soil Excavation (using hand tools).

- ALARACT 6—Tank Farm ALARACT Demonstration for Pit Access.

- ALARACT 7—Tank Farm ALARACT Demonstration for Tank Waste Grab Sampling.

- ALARACT 11—Tank Farm ALARACT Demonstration for Waste Transfers.

- ALARACT 12—Tank Farm ALARACT Demonstration for Packaging and Transportation of Equipment and Vehicles.

- ALARACT 13—Tank Farm ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment.

- ALARACT 14—Tank Farm ALARACT Demonstration for Pit Work.

- ALARACT 15—Tank Farm ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal.

The activities performed at the 244-CR Vault Facility, ER-153 and/or 244-A Lift Station include:

Work Area Preparation:

- Miscellaneous work including equipment delivery, movement, set up and maintenance in the general work area around the 244-CR Vault Facility.

- Construction and take down of open top containment tents (bullpens) over the facility vault area.

- Installation of Portable/Temporary Radioactive Air Emission Unit(s) (PTRAEUs).

- Installation of portable 1,000 cubic feet per minute (cfm) exhauster.

- Removal and/or installation of vault foam covering.

- Application of fixative at pit interior.

- Temporary power installation.

Facility/Interim Stabilization Work:

- Operation of PTRAEU for bullpen ventilation.

- Removal and/or installation of pit covers.

- Inspection of pits, vaults, and tanks.

- Removal and disposition of excess equipment and waste in pits, risers, and tanks.

- Decontamination activities.

- Measurement of liquid level and sludge levels in tanks and sumps.

- Sampling activities in pits, vaults, and tanks including chemical addition and/or waste sampling to determine Double Shell Tank waste acceptance.

Facility Equipment Activities:

- Installation, disconnection, repair, replacement, and/or leak testing, of new and existing facility equipment (valves, jumpers, pumps, leak detectors, or other instrumentation/equipment).

- Modifications, maintenance, and/or isolation and sealing of existing risers, pits, vaults and incoming and/or outgoing piping (drain and transfer lines) from 244-CR Vault or connected facility.

Excavation:

- Installation of permanent power to 244-CR Vault Facility.

- Installation/Operation of Passive Breather Filter Assembly.

Waste Transfer and Support Activities:

- Operation of 1,000 cfm portable exhauster at 244-CR Vault.

- New waste transfer system, waste staging/consolidation.

Miscellaneous activities shall include:

- Construction and take down of open top contaminant tents over the facility vault area.

- Open top containment tents (bullpens) shall be constructed over the facility pit area to prevent potential airborne contamination from the effected work area to the environment. Two bullpens shall be erected around two instrumentation pits at the 244-CR Vault. Upon completion of the first pit's work, the bullpens shall be relocated to the other two pits and their work will be completed.

- Installation of Portable/Temporary Radioactive Air Emission Unit(s) (PTRAEUs)

- A Portable/Temporary Radioactive Air Emission Unit (2,000 cfm) or units (1,000 cfm each) shall be installed to ventilate the bullpens during activities that require work in the pits, cells and tank vault area prior to performing waste transfer activities. One thousand cfm PTRAEUs, if used, shall be directly connected to individual bullpens, while a 2,000 PTRAEU if used, shall be connected to two bullpens. Movement and installation of the PTRAEU can be performed to facilitate ventilation for the four vaults of the 244-CR Vault Facility. The PTRAEU shall operate intermittently (during work activities) and will be operated in accordance with the latest WDOH approval, AIR 99-1102, for the Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

A portable 1,000 cfm exhauster shall be installed to ventilate the 244-CR Facility vaults and tanks during waste transfer activities. This exhauster shall operate intermittently to support waste transfer and support activities and shall monitor air emissions. The exhauster shall be piped into the existing 244-CR facility ventilation system upstream of the existing (non-operating) exhauster, 296-C-05 and HEPA filters. The existing 244-CR Facility exhaust system shall be isolated and not used. Tie in of the 1,000 cfm exhauster to the existing exhaust system shall be in accordance with ALARACT 16, Tank Farm ALARACT Demonstration for Work on Potentially Contaminated Ventilation System Components. After the waste transfer is completed, the exhauster shall be removed in accordance to the requirements of ALARACT 16.

A foam covering has been placed over the 244-CR Vault area to prevent intrusion of precipitation and snowmelt. In order to gain access to the pit cover (metal) plates or concrete cover blocks, sections of the foam shall be removed, packaged, transported and disposed of. ALARACT 4, Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste shall be used to properly disposition the removed foamed covering. Radiation control technicians (RCT) shall monitor the affected work area while the foam covering is being removed. The foam covering shall be replaced after work is complete, as part of intrusion prevention measures

completed by the project following waste transfer activities.

Operation of PTRAEU for Bullpen Ventilation.

Ventilation of the bullpens during pre waste transfer tank activities and prior to the installation of the 1,000 cfm portable exhauster shall be accomplished with the use of PTRAEU(s). The PTRAEU(s) shall be operated in accordance with the latest WDOH approval, AIR 99-1102, for the Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

Concrete cover key blocks are removed first, and only blocks necessary to perform intended work are removed. Consideration is given to sliding blocks to minimize the number of blocks to be removed. As discussed in the following, pit covers are decontaminated and/or covered with fixative before removal. Pit Covers are raised a minimum distance to safely allow a radiation protection technician to perform a dose rate and contamination survey. Pit covers are wrapped in plastic and set down in a specially prepared lay-down area. On completion of activities, the plastic wrap is removed from the pit covers and the pit covers are re-installed in their original position and orientation. Post-job surveys are performed.

Inspections, such as visual, video, or nondestructive inspections, shall be performed with pit covers in place (for pit with access ports) or removed. The pit cover design, historical inspection information, and ALARA information shall be used to determine whether the inspection shall be performed manually (with pit cover removed) or remotely with a camera and the pit covers in place.

Excess equipment and debris currently located in the 244-CR vault pits, and in-tank equipment shall be removed to accommodate new waste transfer equipment and piping. Excess equipment shall be replaced with replacement in kind equipment, as necessary.

To facilitate the removal and disposition of these items, size reduction and decontamination activities shall be utilized. Size reduction activities shall include cutting up unusable equipment (usually jumpers/blanks) remotely, using hydraulic shears or low revolutions per minute portable band saws. All size reduction activities shall be performed in accordance with ALARACT Demonstration 15, TWRS ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal.

Disposition of excess equipment and waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

Removable contamination in the accessible portions of the pit is reduced to less than 100,000 disintegrations per minute/100 square centimeters beta/gamma and 2,000 disintegrations per minute/100 square centimeters alpha by washing, or an approved fixative is applied to pit surfaces. Initial washing with a low pressure (125 pounds per square inch gauge), or high pressure (3,000 pounds per square inch gauge) 'whirly' is accomplished through a port in the pit cover blocks. Additional decontamination activities (with the cover block off) include the use of chemicals, peel and strip paints, water, or manual scrub brushes.

After a section of equipment has been washed it shall be pulled into plastic sleeving and sealed by horse tailing and taping.

Liquid and sludge levels are determined using zip cords or other appropriate means that shall not disturb the waste more than zip cords.

Sampling activities shall be performed in the tank and sump area of 244-CR Vault by way of risers in the riser pit in accordance with ALARACT 7, "Tank Farm ALARACT Demonstration For Tank Waste Grab Sampling." Radiological controls for riser preparation/opening listed in ALARACT 1, "Tank Farm ALARACT Demonstration for Riser Preparation/opening," shall be followed.

The waste transfer processes shall transfer waste from tanks CR-011, CR-001, CR-002 and CR-003 and sumps within 244-CR Vault Facility to a staging tank within the 244-CR Facility. The transfer system to consolidate the waste from individual tanks consists of above ground piping of a hose in hose with leak detection at each tank's pit being utilized to support the transfer line. Mixing and dilution of the waste may take place at the receiving tank or

within the transfer lines directly. The transfer system may include equipment pump skids and shall include appropriate connections to the transfer lines to accommodate chemical and water addition to the 244-CR Facility tanks and mixing prior to transfer to the designated Double Shell Tank (DST).

Before entry into a pit, an evaluation is made by engineering and/or operations personnel to determine the transfer routing configuration after pit work is complete. On removal of cover blocks, a visual inspection of pit contents is made to verify present configuration.

Tools such as impact wrenches, T-bars, and pike poles are used to repair or replace pit equipment. All equipment coming out of the pit is wrapped in plastic or otherwise contained or decontaminated for reuse or disposal. Removable contamination on the outer-most container shall not exceed 1,000 disintegrations per minute/100 square centimeters beta/gamma and 20 disintegrations per minute/100 square centimeters alpha before removal from the bullpen. Disposition of non reusable equipment waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

Jumper work shall be preceded by flushing the appropriate transfer lines with water. Jumper work is accomplished remotely, using a crane to maneuver heavy equipment and parts. Installation, disconnection, and/or changing jumpers/blanks are accomplished by slowly loosening the jumper/blank at the connector head. The required jumper/blank is positioned and tightened to the new connector heads. If the process line or equipment being worked on is connected physically to other unnecessary transfer lines, or if the line is to be left unused, a cap, blank, or equivalent is installed on all open nozzles not connected to jumpers.

Leak testing of newly installed jumpers/blanks shall be performed with pressurized water before initiating waste transfers. Occasionally, a jumper leak test is performed during the initial stages of the transfer. In either case, cover blocks shall be in place before leak testing is performed.

Cutting up unusable pit equipment (usually jumpers/blanks) is accomplished remotely using hydraulic shears or low revolutions per minute portable band saws. Cutting activities shall be performed in the bullpen or in glovebags. The goal shall be to maintain a contamination level equal to or less than 1,000 dpm/100 cm2 beta gamma and 20 dpm/100 cm2 alpha, during cutting activities, but may not always be attainable. RCT coverage shall be provided. Should contamination levels exceed 1,000-dpm/100 cm2 additional sleeving, or use of a glove bag shall be used and/or decontamination activities performed to lower the levels in accordance with ALARA. Welding (if required) shall commence once removable contamination levels in the cut and weld area are reduced to ALARA. Size reduction (cutting) activities shall be performed in accordance with ALARACT Demonstration 15, TWRS ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal. To ensure that water intrusions or potential residual waste in piping are eliminated from the facility, existing piping and transfer lines to and from the 244-CR Vault facility shall be blanked, grouted, or sealed. The isolation includes activities such as installing plugs, caps, blind flanges, or grouting. Isolations may occur at the 244-CR riser pit area or at the other end of the pipe in a diversion or valve box, at the ER153 or the 244A Lift Station.

Modifications to existing in-route pits, vaults and piping shall be required to establish the waste transfer route or to ensure the integrity of the system prior to waste transfer. These modifications can include but are not limited to, removal of existing parts and replacement with like parts, installation of new jumpers, or blanking off of equipment. When possible existing blanks shall be utilized. Pipe cutting shall be minimized in compliance with ALARA. If it is determined that the installation of a new above ground transfer line would be the best engineering method to establish a waste transfer route, a temporary transfer route shall be established following existing design and installation procedures. This temporary route will be either above ground or in a shallow trench. If a trench is required excavation shall be performed as described under that activity in this NOC.

Pit drains are checked using water from a tanker truck or another source. Water at a flow rate of approximately 20 gallons per minute is added to a pit drain line and subsequently monitored to verify the pit drains are free of restrictions. At times it might be necessary to pump the DCRT that receives the water after the water passes through the pit drain if the volume of test water approaches the capacity of the DCRT.

Either flushing with water and/or using a retrieval tool to remove debris from the drain are used to clear plugged drains. Water supply valves are opened slowly to minimize splashing. Pressures above 50 pounds per square inch gauge require approval from the engineering organization. Cover blocks shall remain in place and work is

accomplished through a penetration in the cover block.

The waste transfer operations involve the pumping of liquid waste that contains dissolved solids. These solids can precipitate out of solution anywhere in the transfer path and cause blockage. If blockage is detected in the system, flushing the lines with hot water is necessary. The hot water is introduced to the system to be flushed through a pressure manifold by piping connected directly to a jumper or nozzle. These operations shall be performed with the pit covers on.

To ensure that water intrusions are eliminated from the facility, a foam covering will be placed over the 244-CR Vault area after completion of isolation activities.

Other techniques to free blockages could include pressurization, temporary jumpers, and hydraulic scouring. All piping connections are designed to be leak tight and the pit cover block shall be installed before pressurization. If pressurization beyond that obtained from the tank farms water system or supply truck (i.e., approximately 150 pounds per square inch gauge) is necessary to remove blockage, an engineering evaluation shall be performed to determine the maximum allowable pressure for operation.

Excavation:

Excavation may be required to support installation of ventilation, electrical support and waste transfer equipment. Modifications to existing in route pits, vaults and piping and/or to support installation of new waste transfer lines from the 244-CR Facility to the identified DST may require excavation. Soil excavation activities will be performed in accordance with ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools), and will follow the radiological controls specified in that ALARACT.

Any Guzzler excavations in contamination areas will be performed in accordance with the December 18, 1998, WDOH approved Site Wide Guzzler NOC (Air 98-1215), or the most current NOC approved for Guzzler use. Excavation of contaminated soils using heavy equipment shall follow the requirement of Site Wide Guzzler NOC.

Soil excavation outside the tank farm fence also may be performed with heavy equipment.

Soil will be excavated around the 244-CR vault facility to install new piping, equipment slabs, and new waste transfer system support equipment. It is expected that about 1,000 cubic yards may be excavated, with about 600 cubic yards from inside the tank farm. Backfill shall be from the original removed soil or non-contaminated controlled density fill (sand, water and a small amount of cement).

Current power within the 244-CR Vault Facility is limited. To provide power for new equipment installed under the project, the existing power distribution system shall be upgraded. Upgrades shall involve modification to the existing Motor Control Center (MCC), installation of equipment control panels, and installation of new conduits.

A compliant passive breather filter shall be installed to ventilate the 244-CR Facility vaults and tanks once waste transfer activities are completed. The passive breather filters shall be installed at two locations in the 244-CR facility. A 1,000 cfm HEPA filter shall be installed at the air inlet assembly (previously attached to the evaporative cooler) and a 200 cfm HEPA filter shall be installed upstream of the existing HEPA filter pit. Butterfly valves in the ventilation system just downstream of where the filters shall be installed can be shut to prevent any emission from the facility during filter installation. Installation of the filters shall be performed in accordance with ALARACT Demonstration 16, TWRS ALARACT Demonstration for Work on Potentially Contaminated Ventilation System Components.

During waste transfer and support activities the tank and vault air space shall be actively ventilated by a temporary ventilation system. The temporary ventilation system shall consist of a portable exhauster that shall be equipped with compliant monitoring and sampling equipment. The purpose of the exhauster is to ensure potential airborne contamination from the pits, cells, or process tanks, is not being released to the environment. Operation of the 1,000 cfm portable exhauster is considered an emissions control.

New waste transfer system, waste staging/consolidation.

The planned transfer system can utilize some existing equipment along with installation of new piping and equipment at 244-CR, ER-153 and/or 244-A Lift Station. Maintenance of the transfer system may be required during the waste staging/consolidation. Equipment, which may require on going maintenance includes but is not limited to leak detection and pump system equipment. The waste can be staged/consolidated in one or two of the 244-CR Facility tanks (CR-001, CR-002, CR-003 and CR-011) prior to transfer to a DST.

The following controls are used for the pit activities:

General Controls:

1. Pre-job and post-job radiation surveys are performed by radiation protection technicians. Radiation work permits specify permissible occupational radiological limits during activities. Radiation control technicians' survey and release equipment, inspect and approve required containment, and provide radiological surveys to verify compliance to radiation work permit limits.

2. Pit work is shut down (or not initiated) when sustained wind speeds exceed 25 miles per hour as measured in the field and/or reported by the Hanford Meteorological Station.

3. Fixatives shall be applied inside the pit (with cover blocks on or off) or accessible portions of the pit decontaminated to less than 100,000 disintegrations per minute/100 square centimeters beta-gamma and 2,000 disintegrations per minute/100 square centimeters alpha.

4. When cover blocks are removed, a fall protection handrail is installed. This handrail is draped in plastic forming a contamination barrier. The plastic extends to the top of the pit and is taped or sealed at the top of the pit. Decontamination of the containment barrier is conducted as required by the job specific radiation work permit.

5. Radiation control technicians monitor the affected work area when the vault foam covering is removed, when jumpers and equipment are being removed from risers and nozzles, and when risers are entered for sampling of tanks and sumps. Jumpers removed from the pit are drained of free liquid and decontaminated or contained before removal. The outer-most container shall not exceed 1,000 disintegrations per minute/100 square centimeters beta/gamma and 20 disintegrations per minute/100 square centimeters alpha. If these limits are exceeded, surfaces shall be decontaminated. Disposition of non reusable equipment waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

6. A bullpen designed to minimize the top opening shall be used. Pit covers or cover blocks will be removed as necessary. If the bullpen is to be left unattended at any time, a temporary cover is placed over the pit or the pit covers or cover blocks are reinstalled. Two tents shall be erected over two pits. Upon completion of the work in the first two 244-CR Facility instrumentation pits, the tents will be relocated to the other 244-CR facility instrumentation pits.

7. PTRAEU(s) shall actively ventilate the bullpens during activities that require work in the pits (after removal of the cover blocks) to control radiological releases. The PTRAEU(s) shall operate intermittently and shall be operated in accordance with the latest revision to the WDOH approved. Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

8. A compliant exhauster skid shall ventilate the process cells and tanks during waste transfer activities. The exhauster shall maintain a negative pressure under the cover blocks and prevent contaminants from reaching the environment. The exhauster skid shall be connected to the existing exhaust ductwork with rigid or flexible ductwork.

9. The 1,000 cfm exhauster shall be equipped with a two-stage HEPA filter, which meets the requirements of ASME AG-1, Section FC and shall be tested annually to requirements of ASME AG-1. The HEPA filters shall have an efficiency of 99.95 percent for 0.3-micron median diameter. Each filter housing shall meet the applicable sections of ASME N509 and the test requirement of ASME N510. The exhaust stack houses a Generic Effluent Monitoring System (GEMS) that contains an air velocity probe and the air sampling probe.

10. The breather filter shall consist of a housing that contains a HEPA filter, an outlet screen, and a small seal loop. Air flowing to and from the 244-CR Facility shall pass horizontally through the filter and vertically through the downward-facing exit weather hood. Seal loops, installed in the exhaust lines, are designed as a safety feature to prevent unlikely accident in which an over pressurization occurs when the HEPA filter is isolated for occasional (infrequent) maintenance.

Specific Controls include:

-Installation of portable 1,000 cfm exhauster shall use ALARACT 16.

-Removal and/or installation of vault foam covering - ALARACT 4.

-Application of fixative at pit interior - see General Controls.

-Temporary power installation - ALARA.

-Operation of PTRAEU for bullpen ventilation - Latest WDOH approval, AIR 99-1102, for the Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

-Removal and/or installation of pit covers - General Controls.

-Inspection of pits, vaults, and tanks - General Controls.

-Removal and disposition of excess equipment and waste in pits, risers, and tanks - ALARACT 15, and ALARACT 4.

-Decontamination activities - General Controls.

-Measurement of liquid level and sludge levels in tanks and sumps - General Controls.

-Sampling activities in pits, vaults, and tanks including chemical addition and/or waste sampling to determine Double Shell Tank waste acceptance - ALARACT 7 and ALARACT 1.

-Facility Equipment Activities: installation, disconnection, repair, replacement, and/or leak testing, of new and existing facility equipment (valves, jumpers, pumps, leak detectors, or other instrumentation/equipment) - ALARACT 4, and ALARACT 15.

-Modifications, maintenance, and/or isolation and sealing of existing in route pits, vaults and piping (drain and transfer lines) to support and/or installation of new transfer lines - General Controls.

-Excavation - ALARACT 5, and/or WDOH approved Site Wide Guzzler NOC (Air 98-1215), or the most current NOC approved for Guzzler use.

-Installation of permanent power to 244-CR Vault Facility - ALARA.

-Installation of passive breather filter assembly - ALARACT 16.

-Operation of a portable exhauster at 244-CR vault for ventilation - ALARA.

-New waste transfer system, waste staging/consolidation - General Controls.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	9.90E-01	Am - 241	5.00E+01	Am - 243	7.83E-03
Ba - 137 m	2.98E+04				

		C - 14	1.71E-01	Cd - 113 m	1.18E+01
Cm - 242	9.68E-01	Cm - 243	1.15E-01	Cm - 244	2.63E+00
Co - 60	8.23E+01	Cs - 134	1.06E-01	Cs - 137	3.15E+04
Eu - 152	2.73E+00	Eu - 154	3.56E+02	Eu - 155	3.22E+02
H - 3	2.20E+00	I - 129	4.71E-03	Nb - 93 m	6.88E+00
Ni - 59	4.41E+00	Ni - 63	4.33E+02	Np - 237	1.13E+01
Pa - 231	7.67E-04	Pu - 238	5.03E+00	Pu - 239	4.97E+02
Pu - 240	8.95E+01	Pu - 241	6.26E+02	Pu - 242	7.82E+02
Ra - 226	3.41E-04	Ra - 228	1.85E+00	Ru - 106	1.57E-02
Sb - 125	4.41E+01	Se - 79	1.64E+00	Sm - 151	6.06E+03
Sn - 126	2.59E+00	Sr - 90	3.04E+05	Tc - 99	2.02E+01
Th - 229	1.63E-02	Th - 232	3.10E+00	U - 232	3.97E-01
U - 233	1.52E+00	U - 234	9.99E-01	U - 235	4.20E-02
U - 236	2.53E-02	U - 238	3.58E-01	Y - 90	3.04E+05
Zr - 93	6.00E+00				

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The operation of the waste retrieval system(s) for the removal of radioactive wastes from all 149 Single Shell Tanks (SST) at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The saltcake dissolution waste retrieval system deployed in the SSTs is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped from the SST to a receiver tank, staging tank, storage DST or other staging/storage vessel associated with the supplemental treatment, packaging or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUCING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some SST waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving Double Shell Tank, recirculated supernatant/water, chemical agent or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities in the (SSTs). The vacuum waste retrieval system is introduced into the SSTs by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel or a staging SST, storage DST, or other staging/storage vessels associated with supplemental treatment, packaging or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the SSTs. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B and 241-T Tank Farms a vacuum retrieval process tank, staging tank, staging SST, storage DST or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the SST being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some SSTs. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360 degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

The robotic crawler is equipped with a plow blade at the front for pushing/pulling wastes, a screw pump to jet wastes through a small nozzle towards the center of the tank, the ability to direct hot or cold water through the same nozzle to wash wastes off of in-tank equipment, dissolve waste agglomerations in the tank, and wash waste toward the center of the tank for removal.

Any new retrieval methods or changes to processes will need to be provided to WDOH in a revised NOC prior to implementation.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste from single-shell tanks (SSTs) and move the waste to the double-shell tanks (DSTs). The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non1eaker tanks and 2) a vacuum retrieval option is intended for retrieval of assumed 1eaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	5.99E+00	Am - 241	8.68E+03	Am - 243	3.39E-01
Ba - 137 m	4.26E+07	C - 14	6.25E+02	Cd - 113 m	4.95E+03
Cm - 242	1.97E+01	Cm - 243	1.80E+00	Cm - 244	1.90E+01
Co - 60	2.52E+03	Cs - 134	3.44E+04	Cs - 137	4.89E+07
Eu - 152	8.49E+02	Eu - 154	1.45E+04	Eu - 155	9.54E+03
H - 3	5.95E+03	I - 129	2.95E+01	Nb - 93 m	1.01E+03
Ni - 59	1.05E+02	Ni - 63	9.30E+03	Np - 237	9.50E+01
Pa - 231	1.25E+01	Pu - 238	1.65E+02	Pu - 239	3.17E+03
Pu - 240	5.36E+02	Pu - 241	4.80E+03	Pu - 242	3.34E-02
Ra - 226	1.27E-02	Ra - 228	1.15E+01	Ru - 106	1.22E-02
Sb - 125	1.73E+04	Se - 79	6.36E+01	Sm - 151	8.93E+05
Sn - 126	2.59E+02	Sr - 90	2.91E+06	Tc - 99	2.24E+04
Th - 229	4.20E-01	Th - 232	1.26E+00	U - 232	3.66E+00
U - 233	3.02E+01	U - 234	1.07E+01	U - 235	4.44E-01
U - 236	2.73E-01	U - 238	9.86E+00	Y - 90	2.91E+06
Zr - 93	1.25E+03				

4) A pre-operational NDA of the exhauster(s) HEPA filters and a post-operational NDA will be performed the first time each of the four waste retrieval methods (mobile retrieval system, vacuum retrieval, supernatant sluicing, and saltcake dissolution with supernatant) when placed into service. The post-operational NDA should occur after one cycle or phase of waste retrieval operation is completed, a method replaces another method during a cycle/phase or six months from the inservice date, whichever occurs first. The facility may opt to replace the exhauster's HEPA filters prior to placing a new waste retrieval method in service and eliminate the pre-operational NDA.

5) While the exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading.

6) All ductwork shall be pressure tested in accordance with the requirements of ASME AG-1 Section SA.

7) All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (stagging) SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH.

8) All ventilation ductwork from the exit of the tank to the inlet of the exhauster filter housing shall be insulated.

9) During waste retrieval operations the maximum pressure for any waste retrieval method shall not exceed 37,000 psig.

10) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.

11) General WAC 246-247 technology standard exemptions justified and documented in RPP-19233, WAC 246-247 technology standard exemption justification for waste tank ventilation systems, may be applied to Phase II NOC retrieval exhauster operations.

12) Relative humidity shall be monitored, at least once a month, downstream of the heater and prior to the HEPA filters to ensure the air stream does not exceed 70% relative humidity.

13) The annual possession quantity shall be tracked on a WDOH approved log.

14) The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored, recorded and trended daily. Action levels shall be developed and provided to WDOH for when actions will be taken to assure the pre-filters and HEPA filters will be operated within their design parameters.

15) The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements.

16) The exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank.

Emission Unit ID: 504

600 J NONPOINT SOURCE

600 Area Diffuse/Fugitive

This is a MINOR, FUGITIVE, non-point source emission unit.

600 Area Diffuse Emissions

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Per the sitewide ambient monitoring program

Sampling Requirements Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Associated with emissions from operations, deactivation, surveillance and maintenance, and inactive sites in the 600 Area from sources not actively ventilated.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Use of Portable Tanks and Revised Source Term Description at Waste Sampling and Characterization Facility (WSCF)	AIR 06-1029	10/5/2006	669

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.80E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

* Analytical Laboratory Building (696-W-1) - Solid, liquid, and vapor samples contaminated with low levels of radioactive material are processed, on a bench-scale basis, in fume hoods or other controlled air spaces in the building. Evaporation and wet chemistry also are used to prepare samples for analysis. Low-level waste drums are filled inside the laboratory building and transferred either to the Solid Waste Storage Building (described as follows) or other approved facilities on the Hanford Site, or the low-level waste drums are moved to various locations with WSCF.

* Radiochemistry Laboratory (696-W-2) - This is a below grade counting room in the Analytical Laboratory Building with a separately controlled airspace within the building.

* Environmental Data/Computer Center (6270) - This is a non-radiological building and will not be addressed further.

* Environmental Sample Archive Building (6267) - This building provides for controlled storage, indexing, categorizing and retrieval of low-level contaminated samples. Storage is provided for up to 2,500 samples requiring refrigerated storage and up to 11,500 samples requiring ambient storage. This building also provides

for temporary storage of unvented drums or other low-level waste, packaged in accordance with applicable laboratory procedures. Less than 100 low-level waste packages are stored at any one time.

* Mobile Laboratory Storage Facility (6269) - This structure houses up to five mobile laboratories and provides protection from adverse weather conditions for the instrumentation and computers inside the mobile laboratories. This area contains calibration laboratory instrumentation used in the mobile laboratories, and a sample preparation area for adding chemical buffers and preservatives to sample containers. This building provides temporary storage of drums, or other waste packages contained with low-levels of radioactive material. Less than 100 low-level waste packages are stored at any one time.

* Solid Waste Storage Building (6265A) - This open-sided building shall provide for temporary storage of drums or other low-level waste packages. Less than 100 low-level waste packages are stored at any one time and will not be addressed further in this license, as these are unvented drums.

* Contaminated Liquid Waste Retention Vault (6266A) - Consists of two 3,785 liter polyethylene tanks contained in a common concrete vault. The tanks are designed to receive low-level inorganic and radiologically contaminated liquid waste or sample excess from the analytical laboratory. The liquid routinely is transferred to an approved disposal facility on the Hanford Site using the portable tanker described as follows. This building also provides temporary storage of drums, or other waste packages contaminated with low-levels of radioactive material. Less than 100 low-level waste packages are stored at any one time.

* Sample Equipment Cleaning Facility - This is a non-radiological building and will not be addressed further.

* Portable Tanker(s) used for Wastewater Transport - Wastewater drums containing liquid waste contaminated with low-levels of radioactive material are stored temporarily at various locations within WSCF. In some cases, the contents of these drums are pumped into a portable tanker at the various locations for transport to other facilities. To accomplish the pumping, a small pump has its drop leg inserted into each drum through the bunghole or other opening, and flexible hose transfers the liquid to the tanker.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.40E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.02E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

License PTE limit bounds 1.02E-03 Ci/yr 239Pu and release fraction of 0.001. Any radionuclide on the chart of the nuclides could be encountered during operation of the WSCF. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all alpha is assumed to be 239Pu and all beta/gamma is assumed to be 90Sr for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta/gamma constituents.

B/G - 0	2.11E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

License PTE limit bounds 2.11E-02 Ci/yr 90Sr and release fraction of 0.001. Any radionuclide on the chart of the nuclides could be encountered during operation of the WSCF. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all alpha is assumed to be 239Pu and all beta/gamma is assumed to be 90Sr for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta/gamma constituents.

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notifiy the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) The potential release rates shall not exceed the following limits for the associated buildings:

* Environmental sample archive building (6267) release rate is limited to 3.3E-04 Ci/yr total Alpha and 6.8E-03 Ci/yr total Beta/Gamma.

* Mobile Laboratory Storage Facility (6269) release rate is limited to 3.3E-05 Ci/yr total Alpha and 6.8E-04 Ci/yr total Beta/Gamma.

* Contaminated liquid waste retention vault (6266A) release rate is limited to 3.3E-04 Ci/yr total Alpha and 6.8E-03 Ci/yr total Beta/Gamma.

* Portable tanker used for wastewater transport release rate is limited to 3.3E-04 Ci/yr total Alpha and 6.8E-3 Ci/yr total Beta/Gamma.

5) The WSCF must maintain a log in an approved format for this activity or emission unit.

6) The radiological control technology requirements are as follows:

* 6267 will control emissions by the structure itself, with no containment efficiency provided by the ventilation system. Packaging of the archived samples and monitored storage of closed (unvented) drums and approved low-level waste packages, combined with minimization of any indoor contamination in accordance with established radiation control procedures, provides for effective control of potential fugitive emissions.

* 6269 will control emissions based on the design of the mobile laboratories, combined with minimization of any indoor contamination, in accordance with established radiation control procedures.

* 6265A will control emissions by controlling the waste packages. Minimize the external contamination in accordance with established radiation control procedures.

* 6266A will control emissions by having a passive vent HEPA type high efficiency filter on each tank.

* Portable tanker used for wastewater transport will control emissions by passively venting.

7) The U.S. DOE shall monitor this emission units as follows:

Periodic radiological surveys of swipes or surfaces associated with 6265A, 6269, 6267, and 6266A must be conducted to verify compliance.

Emission Unit ID: 539

200 P-Vadose-002

Air Rotary Drilling

This is a MINOR, ACTIVELY ventilated emission unit.

Tank Farms

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	On the containment structure or the Air Rotary Exhaust and to be used as a record filter when used on Air Rotary Exhaust.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114 (3)	Each radionuclide that could contribute greater than 10 percent of the potential TEDE	The record filter is to be counted annually

Sampling Requirements Perform either a destructive or non-destructive analysis of the record filter using gamma spectrometer calibrated to Cs-137 and radiological field surveys.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit supports Vadose Zone characterization activities that include drilling and sampling of soil from the surface to the depth of groundwater. The emission unit operates on an intermittent basis.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Tank Waste Remediation System Vadose Zone Characterization	AIR 06-1003	10/5/2006	635

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 7.03E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 7.03E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   The following methods of sampling and drilling techniques, including air rotary drilling, sonic drilling, closed-end probe, cable tool drilling, cone penetrometer, air rotary split spoon, and others. This approval applies only to the following tank farms: 241-A, 241-AX, 241-B, 241-BX, 241-BY, 241-C, 241-S, 241-SX, 241-T, 241-TX, 241-TY and 241-U.

   Up to ten equivalent boreholes may be drilled or re-entered per year (consecutive 12-month period) by the methods described. An equivalent borehole shall have a nominal top diameter of no larger than ten inches for the first 50 feet, and a nominal bottom diameter of no larger than eight inches for the remaining 200 feet of pipe (average depth is 250 feet). Additionally, an equivalent borehole shall contain a contaminated layer no more than 20 feet long in the ten inch portion of the equivalent borehole. Individual methods shall be selected based on the likely level (concentration) of contaminants to be encountered. The most conservative drilling approach (lowest potential-to-emit) shall be applied first. Borehole logging shall be used to determine when it is

appropriate to apply drilling techniques that may have a higher potential-to-emit. Zones not sampled during advancement of the borehole due to having a high potential to exceed exposure guidelines may be sampled by side-wall sampling techniques as the boreholes are decommissioned.

Samples from air rotary type drilling shall be obtained from the sampling sock located on the side of the cyclone and/or from the drums underneath the cyclone and torit. The material in the drums will be sampled by pulling a mini-core from the drum. Sampling and change-out of the drums shall be performed inside the containment structure with continuous health physics technician (HPT) coverage.

Borehole drilling techniques that may be used are limited to those described below:

Sonic drilling
Closed-end probe
Traditional cable tool drilling from top to bottom
Cone Penetrometer
Geo Probe
Auger drilling

Soil sampling techniques will include one or a combination of the following techniques:

Air Rotary Split Spoon
Cable Tool
Cable Tool and Auger with a Split Spoon Core Barrel
Sonic Core Barrel and Split Spoon
Rotary Coring
Sidewall Sampling
Drive Split-Spoon Sampler

Sidewall samples being brought to the surface will be bagged or sleeved into plastic or other suitable container (e.g. shielded container) after retrieval if decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 disintegrations per minute (dpm) per 100 cm^2 for beta/gamma or 2,000 dpm/100 cm^2 for alpha. The sampler will then be packaged in a container suitable for shipment to the laboratory for analysis. Other sidewall sampling techniques may involve a lever-action sampler (the sampler is driven into the formation through a cantilever action) or a rotating formation "shaving" device with the sample captured in an under-slung basket.

The brush, used to clean casings, shall be placed in plastic sleeving if decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm^2 for beta/gamma or 2,000 dpm/100 cm^2 for alpha when it is removed from the borehole. Pull the casing into plastic sleeving during removal if decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm^2 for beta/gamma or 2,000 dpm/100 cm^2 for alpha. Unthread the casing if possible, or cut using a wheel cutter, or disconnected from other segments into a nominal length of ten feet. A high-speed blade wheel cutter is not allowed. When necessary, either to accomplish casing removal for borehole decommissioning or to enable pull-back for sidewall sampling, the casing will be cut at depth using a Bowen casing cutter (or equivalent). If decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm^2 for beta/gamma or 2,000 dpm/100 cm^2 for alpha and the casing is sleeved in plastic, no more than one feet of casing shall be exposed to air during the cutting process. Capture cuttings in draped plastic. If decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm^2 for beta/gamma or 2,000 dpm/100 cm^2 for alpha, cap the pieces, cut with plastic or horsetail the sleeving and place sections in a burial box. The hole will be backfilled with clean (nonradioactive) materials (e.g., granular bentonite and/or grout). Casing removal activities are allowed to be performed outside of the containment structure. The closure of the equivalent boreholes may also be performed by backfilling the borehole using a tremie without pulling the casing.

Collect any perched water in the drum at the bottom of the cyclone. Approximately 1,000 gallons of purgewater is allowed to be removed from each equivalent borehole prior to inserting a screen below the water

table. After installation of the screen, groundwater samples will be taken. An average of 2,000 gallons of water (which includes perched water, purgewater and groundwater sampling) is allowed to be removed from each equivalent borehole. Perched water and purgewater will be collected in passively ventilated open-top containers. Water shall be transferred from the passively ventilated containers into a tanker truck for treatment at the 200 Area Effluent Treatment Facility or other permitted storage/treatment facility. Water may be transferred directly from the borehole to the tanker truck, bypassing the intermediate containers.

Approximately 3,500 ft^3 of soil may be excavated per year. Perform excavation using manual methods, backhoe, and/or the Guzzler.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	6.82E-09	Am - 241	5.22E-04	Am - 243	1.16E-08
C - 14	3.19E-06	Cm - 242	4.08E-06	Cm - 243	1.42E-07
Cm - 244	1.32E-06	Co - 60	1.45E-05	Cs - 134	2.22E-07
Cs - 137	2.77E-02	Eu - 152	6.19E-06	Eu - 154	1.30E-04
Eu - 155	3.91E-04	H - 3	1.15E-05	I - 129	2.58E-07
Ni - 59	7.69E-06	Ni - 63	7.48E-04	Np - 237	5.32E-08
Pa - 231	7.08E-09	Pu - 238	3.29E-05	Pu - 239	3.00E-03
Pu - 240	3.17E-04	Pu - 241	1.87E-03	Pu - 242	8.97E-09
Ra - 226	5.53E-10	Ra - 228	2.87E-08	Ru - 106	2.56E-08
Sb - 125	1.09E-05	Sm - 151	2.79E-03	Sn - 126	1.19E-06
Sr - 90	3.10E-01	Tc - 99	5.33E-05	Th - 229	1.16E-09
Th - 232	1.14E-09	U - 232	8.79E-08	U - 233	3.38E-07
U - 234	6.67E-06	U - 235	2.95E-07	U - 236	6.82E-08
U - 238	6.72E-06	Y - 90	3.10E-01	Zr - 93	3.61E-06

4) APQ associated with the air rotary drilling shall be tracked and documented on an approved log and subtracted from the APQ listed for the emissions associated with diffuse and fugitive emissions.

5) Emissions for these activities shall be tracked via a log approved by the department. This log shall track the hours of operation and location of use for each type of equipment, estimated and calculated curies encountered, and calculated emissions. Air samples used for periodic confirmatory measurement shall be collected no closer than three feet above ground level. These samples shall be composited for each three individual sites (total of three samples) and analyzed at the completion of the borehole activity and casing removal. All periodic confirmatory samples will be collected and analyzed following EPA Method 114.

6) Emissions from air rotary drilling activities shall be contained using an active ventilation system attached to the process equipment and a passive vent system attached to the process equipment containment structure. The active ventilation system shall have radioactive air emissions abated by one stage of high efficiency particulate air (HEPA) filter.

Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.

The containment structure shall have a passive HEPA type filter that will provide high efficiency collection. The exhaust fan shall have a maximum average velocity of 0.85 cubic meters per second (1,800 cubic feet per minute) with a range of 0.6 to 1.2 cubic meters per second (1,200 to 2,400 cubic feet per minute) to maintain the ducting between the cyclone and the HEPA filter at atmospheric or less than atmospheric pressure. The drill rig shall be sealed to the casing so that particulates will be contained and routed to the process equipment (e.g., cyclone and torit) located inside the plastic containment structure. The flange on the well discharge head and on the inlet of the cyclone shall be double flanged to reduce the potential for an unabated release to the atmosphere. Additionally, the flexible line connecting the well discharge head and the cyclone shall be encased by another flexible line. The flexible encasement line and flanges shall also be vented to the cyclone. The plastic containment structure surrounding the process control equipment shall be fitted with one stage of HEPA type filtration. When the borehole

or re-entry has been completed and the process equipment is ready to be removed, equipment shall be broken down at the disconnect points and contaminated equipment openings shall be sealed or plugged to minimize the spread of contamination. All work related to disconnecting and moving the equipment shall be performed in accordance with TWRS as low as reasonably achievable control technology (ALARACT) demonstration number 12 or subsequent revision ALARACT "Demonstration for Packaging and Transportation of Equipment and Vehicles".

7) For various characterization options covered under this NOC, the maximum TEDE to the hypothetical off site MEI shall not exceed 7.03 E-02 mrem/year. The maximum TEDE to the MEI shall not exceed 5.7 E-02 mrem/year at the Energy Northwest location as determined by CAP88PC, Version 2 supplied as supporting documentation.

8) Periodic confirmatory sampling is required. For the air rotary type drilling this shall consist of a destructive or non-destructive analysis of the record filter combined with radiological field surveys during the work. The record HEPA type filter located downstream shall have a minimum efficiency of 90 percent for particulates with a median diameter of 0.3 microns as specified by the manufacturer. The radiological analyses from the soil samples will be averaged to determine the isotopic distribution of Strontium-90 (Sr-90), Cesium-137 (Cs-137), Plutonium-239 (Pu-239) and Americium (Am-241). The record filter will be counted using a gamma spectrometer calibrated to Cs-137. Counting will be done annually using either a destructive or non-destructive technique.

   The soil sample isotope ratios will be applied to Cs-137 on the record filter to confirm low emissions. In addition, the HEPA filter housing shall be field surveyed after the completion of each borehole or re-entry to verify low emissions. Periodic confirmatory monitoring of the passive HEPA type filter will be accomplished by performing a field survey of the filter housing to confirm low emissions. The field survey of the passive HEPA type filter will be performed after the completion of each borehole or re-entry. These methods of performing these "field surveys" shall be submitted to the department for approval (WAC 246-247-075(3)).

Emission Unit ID: 541

200 P-Vadose-003

Air Hammer Drilling

This is a MINOR, ACTIVELY ventilated emission unit.

Tank Farms

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	The HEPA filter may or may not have an exhaust fan associated with it.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential TEDE	After each borehole and record filter counted annually

Sampling Requirements For passive HEPA filter, perform field survey of the filter housing. Perform a non-destructive NDA of the record filter using gamma spectroscopy calibrated to Cs137 and radiological surveys

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit supports Vadose Zone characterization activities that include drilling and sampling of soil from the surface to the depth of groundwater. The emission unit operates on an intermittent basis.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Tank Waste Remediation System Vadose Zone Characterization	AIR 06-1003	10/5/2006	635

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 7.03E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 7.03E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   The following methods of sampling and drilling techniques, including air rotary drilling, sonic drilling, closed-end probe, cable tool drilling, cone penetrometer, air rotary split spoon, and others. This approval applies only to the following tank farms: 241-A, 241-AX, 241-B, 241-BX, 241-BY, 241-C, 241-S, 241-SX, 241-T, 241-TX, 241-TY and 241-U.

   Up to ten equivalent boreholes may be drilled or re-entered per year (consecutive 12-month period) by the methods described. An equivalent borehole shall have a nominal top diameter of no larger than ten inches for the first 50 feet, and a nominal bottom diameter of no larger than eight inches for the remaining 200 feet of pipe (average depth is 250 feet). Additionally, an equivalent borehole shall contain a contaminated layer no more than 20 feet long in the ten inch portion of the equivalent borehole. Individual methods shall be selected based on the likely level (concentration) of contaminants to be encountered. The most conservative drilling approach (lowest potential-to-emit) shall be applied first. Borehole logging shall be used to determine when it is appropriate to apply drilling techniques that may have a higher potential-to-emit. Zones not sampled during advancement of the borehole due to having a high potential to exceed exposure guidelines may be sampled by

side-wall sampling techniques as the boreholes are decommissioned.

Samples from air rotary type drilling shall be obtained from the sampling sock located on the side of the cyclone and/or from the drums underneath the cyclone and torit. The material in the drums will be sampled by pulling a mini-core from the drum. Sampling and change-out of the drums shall be performed inside the containment structure with continuous health physics technician (HPT) coverage.

Borehole drilling techniques that may be used are limited to those described below:

Sonic drilling
Closed-end probe
Traditional cable tool drilling from top to bottom
Cone Penetrometer
Geo Probe
Auger drilling

Soil sampling techniques will include one or a combination of the following techniques:

Air Rotary Split Spoon
Cable Tool
Cable Tool and Auger with a Split Spoon Core Barrel
Sonic Core Barrel and Split Spoon
Rotary Coring
Sidewall Sampling
Drive Split-Spoon Sampler

Sidewall samples being brought to the surface will be bagged or sleeved into plastic or other suitable container (e.g. shielded container) after retrieval if decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 disintegrations per minute (dpm) per 100 cm^2 for beta/gamma or 2,000 dpm/100 cm^2 for alpha. The sampler will then be packaged in a container suitable for shipment to the laboratory for analysis. Other sidewall sampling techniques may involve a lever-action sampler (the sampler is driven into the formation through a cantilever action) or a rotating formation "shaving" device with the sample captured in an under-slung basket.

The brush, used to clean casings, shall be placed in plastic sleeving if decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm^2 for beta/gamma or 2,000 dpm/100 cm^2 for alpha when it is removed from the borehole. Pull the casing into plastic sleeving during removal if decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm^2 for beta/gamma or 2,000 dpm/100 cm^2 for alpha. Unthread the casing if possible, or cut using a wheel cutter, or disconnected from other segments into a nominal length of ten feet. A high-speed blade wheel cutter is not allowed. When necessary, either to accomplish casing removal for borehole decommissioning or to enable pull-back for sidewall sampling, the casing will be cut at depth using a Bowen casing cutter (or equivalent). If decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm^2 for beta/gamma or 2,000 dpm/100 cm^2 for alpha and the casing is sleeved in plastic, no more than one feet of casing shall be exposed to air during the cutting process. Capture cuttings in draped plastic. If decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm^2 for beta/gamma or 2,000 dpm/100 cm^2 for alpha, cap the pieces, cut with plastic or horsetail the sleeving and place sections in a burial box. The hole will be backfilled with clean (nonradioactive) materials (e.g., granular bentonite and/or grout). Casing removal activities are allowed to be performed outside of the containment structure. The closure of the equivalent boreholes may also be performed by backfilling the borehole using a tremie without pulling the casing.

Collect any perched water in the drum at the bottom of the cyclone. Approximately 1,000 gallons of purgewater is allowed to be removed from each equivalent borehole prior to inserting a screen below the water table. After installation of the screen, groundwater samples will be taken. An average of 2,000 gallons of water (which includes perched water, purgewater and groundwater sampling) is allowed to be removed from

each equivalent borehole. Perched water and purgewater will be collected in passively ventilated open-top containers. Water shall be transferred from the passively ventilated containers into a tanker truck for treatment at the 200 Area Effluent Treatment Facility or other permitted storage/treatment facility. Water may be transferred directly from the borehole to the tanker truck, bypassing the intermediate containers.

Approximately 3,500 ft^3 of soil may be excavated per year. Perform excavation using manual methods, backhoe, and/or the Guzzler.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	2.02E-06	Am - 241	1.55E-01	Am - 243	3.45E-06
C - 14	9.47E-04	Cm - 242	1.21E-03	Cm - 243	4.22E-05
Cm - 244	3.93E-04	Co - 60	4.30E-03	Cs - 134	6.58E-05
Cs - 137	8.23E+00	Eu - 152	1.84E-03	Eu - 154	3.86E-02
Eu - 155	1.16E-01	H - 3	3.42E-03	I - 129	7.64E-05
Ni - 59	2.28E-03	Ni - 63	2.22E-01	Np - 237	1.58E-05
Pa - 231	2.10E-06	Pu - 238	9.77E-03	Pu - 239	8.91E-01
Pu - 240	9.40E-02	Pu - 241	5.56E-01	Pu - 242	2.66E-06
Ra - 226	1.64E-07	Ra - 228	8.52E-06	Ru - 106	7.60E-06
Sb - 125	3.23E-03	Sm - 151	8.29E-01	Sn - 126	3.54E-04
Sr - 90	9.19E+01	Tc - 99	1.58E-02	Th - 229	3.45E-07
Th - 232	3.38E-07	U - 232	2.61E-05	U - 233	1.00E-04
U - 234	1.98E-03	U - 235	8.76E-05	U - 236	2.02E-05
U - 238	2.00E-03	Y - 90	9.19E+01	Zr - 93	1.07E-03

4) Approval is given to use a downhole air hammer to drive a sampler while using a closed end probe.

5) APQ associated with the air hammer operation shall not exceed 195 curies. This shall be tracked and documented on an approved log and subtracted from the APQ listed for the emissions associated with diffuse and fugitive emissions.

6) Emissions associated with the downhole air hammer will be routed to a passive or active ventilated HEPA filter. Pressure gauges will be installed on the emissions unit and will be monitored and recorded daily during operation of the downhole air hammer. Operation in the passive mode will not be allowed if the HEPA inlet pressure exceeds 20 inches water gauge and differential pressure exceeds 5.9 inches water gauge. Operation in the active ventilation mode will not be allowed if the HEPA inlet pressure exceeds 20 inches water gauge and differential pressure exceeds 5.9 inches water gauge. The flow shall not exceed the HEPA filter manufactures recommendation. Emissions from the drill rig shall be minimized using a double gasket seal and a chromed casing. This area shall be smear surveyed at the beginning and end of the work cycle and documented to determine adequacy of seal.

7) Emissions for these activities shall be tracked via a log approved by the department. This log shall track the hours of operation and location of use for each type of equipment, estimated and calculated curies encountered, and calculated emissions. Air samples used for periodic confirmatory measurement shall be collected no closer than 3 ft above ground level. These samples shall be composited for each three individual sites (total of three samples) and analyzed at the completion of the borehole activity and casing removal. All periodic confirmatory samples will be collected and analyzed following EPA Method 114.

8) For various characterization options covered under this NOC, the maximum TEDE to the hypothetical off site MEI shall not exceed 7.03 E-02 mrem/year. The maximum TEDE to the MEI shall not exceed 5.7 E-02 mrem/year at the Energy Northwest location as determined by CAP88PC, Version 2 supplied as supporting documentation.

9) Operation of the passive or active ventilation unit during the operation of the air hammer shall be documented on an approved log.

10) Periodic confirmatory sampling is required. For the air hammer method, instead of air sampling near the HEPA as described in the NOC, this shall consist of a destructive or non-destructive analysis of the HEPA filter combined with radiological field surveys during the work. The HEPA type filter located downstream of the process equipment shall be leak tested.

Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filter shall have a minimum efficiency of 99.95%.

The radiological analyses from the soil samples will be averaged to determine the isotopic distribution of Strontium-90 (Sr-90), Cs-137, Plutonium-239 (Pu-239), and Americium (Am-241). The record filter will be counted using a gamma spectrometer calibrated to Cs-137. Counting will be done annually using either a destructive or non-destructive technique.

11) The emission unit shall be inspected daily during operation and after any relocations. Line pressure tests will be performed on the line between the well head and the filter and/or fan prior to deploying the air hammer. Line pressure tests will be performed in accordance with ASME/ANSI N510.

Emission Unit ID: 689

100K 100 Area Diffuse/Fugitive

100 Area Diffuse/Fugitive Emissions

This is a MINOR, FUGITIVE, non-point source emission unit.

100 K diffuse/fugitive emissions

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
			Abatement controls as required in the following Conditions and Limitations.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential TEDE	Per the sitewide ambient monitoring program

Sampling Requirements Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Associated with emissions from operations, deactivation, surveillance and maintenance, and inactive sites in the 100 K Area, 100 Area from sources not actively ventilated.

Emission Unit ID: 712

200E P-241C-004

241-C-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the SST to vent to the atmosphere under tank farm storage, maintenance, and operations. The tanks store radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The tanks are scheduled for waste retrieval, decommissioning, and eventual closure under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

Emission Unit ID: 713

200E P-244CR-002

244-CR Vault Passive Filter A

This is a MINOR, PASSIVELY ventilated emission unit.

244-CR VAULT

Emission Unit Information

Stack Height: 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114(3)	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a building/facility passive breather filter that is used to ventilate building and facility operations such as but not limited to process vessels, contaminated rooms, cells, glove boxes, hoods, abandoned facilities awaiting decommissioning, and vaults that support tank farm operations, maintenance, and surveillance activities for tank farms. Entry into the building/facility consists of activities to support current surveillance, maintenance, operations, decommissioning, decontamination, and cleanup activities. Many of the activities other than normal surveillance, maintenance, and operation support will be or are regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
244-CR Vault Isolation and Interim Stabilization	AIR 09-902	9/15/2009	685

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.10E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.82E+01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Sump Intrusion Mitigation:

Sump intrusion mitigation is limited to cells 001, 002, 003, and 011 only. From time to time if intrusion of precipitation and snow melt gets into the sumps, the sumps will need to be pumped. In order to accommodate this, submersible pump assemblies will be installed in each of the four CR Vault Cells. The pump assemblies will be installed on top of existing 6 inch riser extensions on cells 001, 002, 003, and 011. Riser extensions may be

installed, or replaced if necessary. These extensions will be installed and/or removed as follows:

- the pit covers will be removed,

- above grade piping will be cut and capped,

- leak detectors and two zip cords will be removed,

- the riser extensions will be installed and/or removed remotely from a platform over the pit, and

- a new pit cover will be installed.

The sumps will be pumped by connecting a transfer line to a ventilated tank or to the Tanker Truck permitted under AOP Emission Unit Number 888 and licensed under WDOH NOC ID Number 696. The transfer line will be a hose-in sleeve line. The other end of the transfer line will be attached to the pump assembly on the first CR Vault cell to be pumped. After the first cell is pumped, flush water will be added and pumped to flush the system. Then the hose will be relocated to the next cell's pump assembly. The process will be repeated until all the cells are pumped. The CR Vault breather filter will not be modified and will be open during pumping. After the pumping is complete, the transfer line and pumps will be removed and disposed of as mixed waste. The pit foam covering will also be replaced to prevent, or at best minimize intrusion of precipitation and snow melt.

A fixative shall be applied with the pit covers on. The fixatives shall be applied to pit surfaces through a port in the pit cover using a 'whirly' or by fogging. A hand held sprayer is used to apply fixatives within the pit when the pit cover is off.

Temporary power installation will be limited to meet the needs to support the work described in this NOC. Temporary installations can be removed when no longer needed.

General Controls for Sump Intrusion Mitigation:

The general controls for sump intrusion mitigation is limited to cells 001, 002, 003, and 011 only. The required controls for each of the following actions are delineated by the specified ALARACT:

- ALARACT 1—Tank Farm ALARACT Demonstration for Riser Preparation/Opening.

- ALARACT 4—Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste.

- ALARACT 5—Tank Farm ALARACT Demonstration for Soil Excavation (using hand tools).

- ALARACT 6—Tank Farm ALARACT Demonstration for Pit Access.

- ALARACT 7—Tank Farm ALARACT Demonstration for Tank Waste Grab Sampling.

- ALARACT 11—Tank Farm ALARACT Demonstration for Waste Transfers.

- ALARACT 12—Tank Farm ALARACT Demonstration for Packaging and Transportation of Equipment and Vehicles.

- ALARACT 13—Tank Farm ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment.

- ALARACT 14—Tank Farm ALARACT Demonstration for Pit Work.

- ALARACT 15—Tank Farm ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal.

The activities performed at the 244-CR Vault Facility, ER-153 and/or 244-A Lift Station include:

Work Area Preparation:

- Miscellaneous work including equipment delivery, movement, set up and maintenance in the general work area around the 244-CR Vault Facility.

- Construction and take down of open top containment tents (bullpens) over the facility vault area.

- Installation of Portable/Temporary Radioactive Air Emission Unit(s) (PTRAEUs).

- Installation of portable 1,000 cubic feet per minute (cfm) exhauster.

- Removal and/or installation of vault foam covering.

- Application of fixative at pit interior.

- Temporary power installation.

Facility/Interim Stabilization Work:

- Operation of PTRAEU for bullpen ventilation.

- Removal and/or installation of pit covers.

- Inspection of pits, vaults, and tanks.

- Removal and disposition of excess equipment and waste in pits, risers, and tanks.

- Decontamination activities.

- Measurement of liquid level and sludge levels in tanks and sumps.

- Sampling activities in pits, vaults, and tanks including chemical addition and/or waste sampling to determine Double Shell Tank waste acceptance.

Facility Equipment Activities:

- Installation, disconnection, repair, replacement, and/or leak testing, of new and existing facility equipment (valves, jumpers, pumps, leak detectors, or other instrumentation/equipment).

- Modifications, maintenance, and/or isolation and sealing of existing risers, pits, vaults and incoming and/or outgoing piping (drain and transfer lines) from 244-CR Vault or connected facility.

Excavation:

- Installation of permanent power to 244-CR Vault Facility.

- Installation/Operation of Passive Breather Filter Assembly.

Waste Transfer and Support Activities:

- Operation of 1,000 cfm portable exhauster at 244-CR Vault.

- New waste transfer system, waste staging/consolidation.

Miscellaneous activities shall include:

- Construction and take down of open top contaminant tents over the facility vault area.

- Open top containment tents (bullpens) shall be constructed over the facility pit area to prevent potential airborne contamination from the effected work area to the environment. Two bullpens shall be erected around two instrumentation pits at the 244-CR Vault. Upon completion of the first pit's work, the bullpens shall be relocated to the other two pits and their work will be completed.

- Installation of Portable/Temporary Radioactive Air Emission Unit(s) (PTRAEUs)

- A Portable/Temporary Radioactive Air Emission Unit (2,000 cfm) or units (1,000 cfm each) shall be installed to ventilate the bullpens during activities that require work in the pits, cells and tank vault area prior to performing waste transfer activities. One thousand cfm PTRAEUs, if used, shall be directly connected to individual bullpens, while a 2,000 PTRAEU if used, shall be connected to two bullpens. Movement and installation of the PTRAEU can be performed to facilitate ventilation for the four vaults of the 244-CR Vault Facility. The PTRAEU shall operate intermittently (during work activities) and will be operated in accordance with the latest WDOH approval, AIR 99-1102, for the Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

A portable 1,000 cfm exhauster shall be installed to ventilate the 244-CR Facility vaults and tanks during waste transfer activities. This exhauster shall operate intermittently to support waste transfer and support activities and shall monitor air emissions. The exhauster shall be piped into the existing 244-CR facility ventilation system upstream of the existing (non-operating) exhauster, 296-C-05 and HEPA filters. The existing 244-CR Facility exhaust system shall be isolated and not used. Tie in of the 1,000 cfm exhauster to the existing exhaust system shall be in accordance with ALARACT 16, Tank Farm ALARACT Demonstration for Work on Potentially Contaminated Ventilation System Components. After the waste transfer is completed, the exhauster shall be removed in accordance to the requirements of ALARACT 16.

A foam covering has been placed over the 244-CR Vault area to prevent intrusion of precipitation and snowmelt. In order to gain access to the pit cover (metal) plates or concrete cover blocks, sections of the foam shall be removed, packaged, transported and disposed of. ALARACT 4, Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste shall be used to properly disposition the removed foamed covering. Radiation control technicians (RCT) shall monitor the affected work area while the foam covering is being removed. The foam covering shall be replaced after work is complete, as part of intrusion prevention measures completed by the project following waste transfer activities.

Operation of PTRAEU for Bullpen Ventilation.

Ventilation of the bullpens during pre waste transfer tank activities and prior to the installation of the 1,000 cfm portable exhauster shall be accomplished with the use of PTRAEU(s). The PTRAEU(s) shall be operated in accordance with the latest WDOH approval, AIR 99-1102, for the Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

Concrete cover key blocks are removed first, and only blocks necessary to perform intended work are removed. Consideration is given to sliding blocks to minimize the number of blocks to be removed. As discussed in the following, pit covers are decontaminated and/or covered with fixative before removal. Pit Covers are raised a minimum distance to safely allow a radiation protection technician to perform a dose rate and contamination survey. Pit covers are wrapped in plastic and set down in a specially prepared lay-down area. On completion of activities, the plastic wrap is removed from the pit covers and the pit covers are re-installed in their original position and orientation. Post-job surveys are performed.

Inspections, such as visual, video, or nondestructive inspections, shall be performed with pit covers in place (for pit with access ports) or removed. The pit cover design, historical inspection information, and ALARA

information shall be used to determine whether the inspection shall be performed manually (with pit cover removed) or remotely with a camera and the pit covers in place.

Excess equipment and debris currently located in the 244-CR vault pits, and in-tank equipment shall be removed to accommodate new waste transfer equipment and piping. Excess equipment shall be replaced with replacement in kind equipment, as necessary.

To facilitate the removal and disposition of these items, size reduction and decontamination activities shall be utilized. Size reduction activities shall include cutting up unusable equipment (usually jumpers/blanks) remotely, using hydraulic shears or low revolutions per minute portable band saws. All size reduction activities shall be performed in accordance with ALARACT Demonstration 15, TWRS ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal.

Disposition of excess equipment and waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

Removable contamination in the accessible portions of the pit is reduced to less than 100,000 disintegrations per minute/100 square centimeters beta/gamma and 2,000 disintegrations per minute/100 square centimeters alpha by washing, or an approved fixative is applied to pit surfaces. Initial washing with a low pressure (125 pounds per square inch gauge), or high pressure (3,000 pounds per square inch gauge) 'whirly' is accomplished through a port in the pit cover blocks. Additional decontamination activities (with the cover block off) include the use of chemicals, peel and strip paints, water, or manual scrub brushes.

After a section of equipment has been washed it shall be pulled into plastic sleeving and sealed by horse tailing and taping.

Liquid and sludge levels are determined using zip cords or other appropriate means that shall not disturb the waste more than zip cords.

Sampling activities shall be performed in the tank and sump area of 244-CR Vault by way of risers in the riser pit in accordance with ALARACT 7, "Tank Farm ALARACT Demonstration For Tank Waste Grab Sampling." Radiological controls for riser preparation/opening listed in ALARACT 1, "Tank Farm ALARACT Demonstration for Riser Preparation/opening," shall be followed.

The waste transfer processes shall transfer waste from tanks CR-011, CR-001, CR-002 and CR-003 and sumps within 244-CR Vault Facility to a staging tank within the 244-CR Facility. The transfer system to consolidate the waste from individual tanks consists of above ground piping of a hose in hose with leak detection at each tank's pit being utilized to support the transfer line. Mixing and dilution of the waste may take place at the receiving tank or within the transfer lines directly. The transfer system may include equipment pump skids and shall include appropriate connections to the transfer lines to accommodate chemical and water addition to the 244-CR Facility tanks and mixing prior to transfer to the designated Double Shell Tank (DST).

Before entry into a pit, an evaluation is made by engineering and/or operations personnel to determine the transfer routing configuration after pit work is complete. On removal of cover blocks, a visual inspection of pit contents is made to verify present configuration.

Tools such as impact wrenches, T-bars, and pike poles are used to repair or replace pit equipment. All equipment coming out of the pit is wrapped in plastic or otherwise contained or decontaminated for reuse or disposal. Removable contamination on the outer-most container shall not exceed 1,000 disintegrations per minute/100 square centimeters beta/gamma and 20 disintegrations per minute/100 square centimeters alpha before removal from the bullpen. Disposition of non reusable equipment waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

Jumper work shall be preceded by flushing the appropriate transfer lines with water. Jumper work is accomplished remotely, using a crane to maneuver heavy equipment and parts. Installation, disconnection, and/or changing jumpers/blanks are accomplished by slowly loosening the jumper/blank at the connector head. The required jumper/blank is positioned and tightened to the new connector heads. If the process line or equipment

being worked on is connected physically to other unnecessary transfer lines, or if the line is to be left unused, a cap, blank, or equivalent is installed on all open nozzles not connected to jumpers.

Leak testing of newly installed jumpers/blanks shall be performed with pressurized water before initiating waste transfers. Occasionally, a jumper leak test is performed during the initial stages of the transfer. In either case, cover blocks shall be in place before leak testing is performed.

Cutting up unusable pit equipment (usually jumpers/blanks) is accomplished remotely using hydraulic shears or low revolutions per minute portable band saws. Cutting activities shall be performed in the bullpen or in glovebags. The goal shall be to maintain a contamination level equal to or less than 1,000 dpm/100 cm2 beta gamma and 20 dpm/100 cm2 alpha, during cutting activities, but may not always be attainable. RCT coverage shall be provided. Should contamination levels exceed 1,000-dpm/100 cm2 additional sleeving, or use of a glove bag shall be used and/or decontamination activities performed to lower the levels in accordance with ALARA. Welding (if required) shall commence once removable contamination levels in the cut and weld area are reduced to ALARA. Size reduction (cutting) activities shall be performed in accordance with ALARACT Demonstration 15, TWRS ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal. To ensure that water intrusions or potential residual waste in piping are eliminated from the facility, existing piping and transfer lines to and from the 244-CR Vault facility shall be blanked, grouted, or sealed. The isolation includes activities such as installing plugs, caps, blind flanges, or grouting. Isolations may occur at the 244-CR riser pit area or at the other end of the pipe in a diversion or valve box, at the ER153 or the 244A Lift Station.

Modifications to existing in-route pits, vaults and piping shall be required to establish the waste transfer route or to ensure the integrity of the system prior to waste transfer. These modifications can include but are not limited to, removal of existing parts and replacement with like parts, installation of new jumpers, or blanking off of equipment. When possible existing blanks shall be utilized. Pipe cutting shall be minimized in compliance with ALARA. If it is determined that the installation of a new above ground transfer line would be the best engineering method to establish a waste transfer route, a temporary transfer route shall be established following existing design and installation procedures. This temporary route will be either above ground or in a shallow trench. If a trench is required excavation shall be performed as described under that activity in this NOC.

Pit drains are checked using water from a tanker truck or another source. Water at a flow rate of approximately 20 gallons per minute is added to a pit drain line and subsequently monitored to verify the pit drains are free of restrictions. At times it might be necessary to pump the DCRT that receives the water after the water passes through the pit drain if the volume of test water approaches the capacity of the DCRT.

Either flushing with water and/or using a retrieval tool to remove debris from the drain are used to clear plugged drains. Water supply valves are opened slowly to minimize splashing. Pressures above 50 pounds per square inch gauge require approval from the engineering organization. Cover blocks shall remain in place and work is accomplished through a penetration in the cover block.

The waste transfer operations involve the pumping of liquid waste that contains dissolved solids. These solids can precipitate out of solution anywhere in the transfer path and cause blockage. If blockage is detected in the system, flushing the lines with hot water is necessary. The hot water is introduced to the system to be flushed through a pressure manifold by piping connected directly to a jumper or nozzle. These operations shall be performed with the pit covers on.

To ensure that water intrusions are eliminated from the facility, a foam covering will be placed over the 244-CR Vault area after completion of isolation activities.

Other techniques to free blockages could include pressurization, temporary jumpers, and hydraulic scouring. All piping connections are designed to be leak tight and the pit cover block shall be installed before pressurization. If pressurization beyond that obtained from the tank farms water system or supply truck (i.e., approximately 150 pounds per square inch gauge) is necessary to remove blockage, an engineering evaluation shall be performed to determine the maximum allowable pressure for operation.

Excavation:

Excavation may be required to support installation of ventilation, electrical support and waste transfer equipment. Modifications to existing in route pits, vaults and piping and/or to support installation of new waste transfer lines from the 244-CR Facility to the identified DST may require excavation. Soil excavation activities will be performed in accordance with ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools), and will follow the radiological controls specified in that ALARACT.

Any Guzzler excavations in contamination areas will be performed in accordance with the December 18, 1998, WDOH approved Site Wide Guzzler NOC (Air 98-1215), or the most current NOC approved for Guzzler use. Excavation of contaminated soils using heavy equipment shall follow the requirement of Site Wide Guzzler NOC.

Soil excavation outside the tank farm fence also may be performed with heavy equipment.

Soil will be excavated around the 244-CR vault facility to install new piping, equipment slabs, and new waste transfer system support equipment. It is expected that about 1,000 cubic yards may be excavated, with about 600 cubic yards from inside the tank farm. Backfill shall be from the original removed soil or non-contaminated controlled density fill (sand, water and a small amount of cement).

Current power within the 244-CR Vault Facility is limited. To provide power for new equipment installed under the project, the existing power distribution system shall be upgraded. Upgrades shall involve modification to the existing Motor Control Center (MCC), installation of equipment control panels, and installation of new conduits.

A compliant passive breather filter shall be installed to ventilate the 244-CR Facility vaults and tanks once waste transfer activities are completed. The passive breather filters shall be installed at two locations in the 244-CR facility. A 1,000 cfm HEPA filter shall be installed at the air inlet assembly (previously attached to the evaporative cooler) and a 200 cfm HEPA filter shall be installed upstream of the existing HEPA filter pit. Butterfly valves in the ventilation system just downstream of where the filters shall be installed can be shut to prevent any emission from the facility during filter installation. Installation of the filters shall be performed in accordance with ALARACT Demonstration 16, TWRS ALARACT Demonstration for Work on Potentially Contaminated Ventilation System Components.

During waste transfer and support activities the tank and vault air space shall be actively ventilated by a temporary ventilation system. The temporary ventilation system shall consist of a portable exhauster that shall be equipped with compliant monitoring and sampling equipment. The purpose of the exhauster is to ensure potential airborne contamination from the pits, cells, or process tanks, is not being released to the environment. Operation of the 1,000 cfm portable exhauster is considered an emissions control.

New waste transfer system, waste staging/consolidation.

The planned transfer system can utilize some existing equipment along with installation of new piping and equipment at 244-CR, ER-153 and/or 244-A Lift Station. Maintenance of the transfer system may be required during the waste staging/consolidation. Equipment, which may require on going maintenance includes but is not limited to leak detection and pump system equipment. The waste can be staged/consolidated in one or two of the 244-CR Facility tanks (CR-001, CR-002, CR-003 and CR-011) prior to transfer to a DST.

The following controls are used for the pit activities:

General Controls:

1. Pre-job and post-job radiation surveys are performed by radiation protection technicians. Radiation work permits specify permissible occupational radiological limits during activities. Radiation control technicians' survey and release equipment, inspect and approve required containment, and provide radiological surveys to verify compliance to radiation work permit limits.

2. Pit work is shut down (or not initiated) when sustained wind speeds exceed 25 miles per hour as measured in the field and/or reported by the Hanford Meteorological Station.

3. Fixatives shall be applied inside the pit (with cover blocks on or off) or accessible portions of the pit decontaminated to less than 100,000 disintegrations per minute/100 square centimeters beta-gamma and 2,000 disintegrations per minute/100 square centimeters alpha.

4. When cover blocks are removed, a fall protection handrail is installed. This handrail is draped in plastic forming a contamination barrier. The plastic extends to the top of the pit and is taped or sealed at the top of the pit. Decontamination of the containment barrier is conducted as required by the job specific radiation work permit.

5. Radiation control technicians monitor the affected work area when the vault foam covering is removed, when jumpers and equipment are being removed from risers and nozzles, and when risers are entered for sampling of tanks and sumps. Jumpers removed from the pit are drained of free liquid and decontaminated or contained before removal. The outer-most container shall not exceed 1,000 disintegrations per minute/100 square centimeters beta/gamma and 20 disintegrations per minute/100 square centimeters alpha. If these limits are exceeded, surfaces shall be decontaminated. Disposition of non reusable equipment waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

6. A bullpen designed to minimize the top opening shall be used. Pit covers or cover blocks will be removed as necessary. If the bullpen is to be left unattended at any time, a temporary cover is placed over the pit or the pit covers or cover blocks are reinstalled. Two tents shall be erected over two pits. Upon completion of the work in the first two 244-CR Facility instrumentation pits, the tents will be relocated to the other 244-CR facility instrumentation pits.

7. PTRAEU(s) shall actively ventilate the bullpens during activities that require work in the pits (after removal of the cover blocks) to control radiological releases. The PTRAEU(s) shall operate intermittently and shall be operated in accordance with the latest revision to the WDOH approved. Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

8. A compliant exhauster skid shall ventilate the process cells and tanks during waste transfer activities. The exhauster shall maintain a negative pressure under the cover blocks and prevent contaminants from reaching the environment. The exhauster skid shall be connected to the existing exhaust ductwork with rigid or flexible ductwork.

9. The 1,000 cfm exhauster shall be equipped with a two-stage HEPA filter, which meets the requirements of ASME AG-1, Section FC and shall be tested annually to requirements of ASME AG-1. The HEPA filters shall have an efficiency of 99.95 percent for 0.3-micron median diameter. Each filter housing shall meet the applicable sections of ASME N509 and the test requirement of ASME N510. The exhaust stack houses a Generic Effluent Monitoring System (GEMS) that contains an air velocity probe and the air sampling probe.

10. The breather filter shall consist of a housing that contains a HEPA filter, an outlet screen, and a small seal loop. Air flowing to and from the 244-CR Facility shall pass horizontally through the filter and vertically through the downward-facing exit weather hood. Seal loops, installed in the exhaust lines, are designed as a safety feature to prevent unlikely accident in which an over pressurization occurs when the HEPA filter is isolated for occasional (infrequent) maintenance.

Specific Controls include:

-Installation of portable 1,000 cfm exhauster shall use ALARACT 16.

-Removal and/or installation of vault foam covering - ALARACT 4.

-Application of fixative at pit interior - see General Controls.

-Temporary power installation - ALARA.

-Operation of PTRAEU for bullpen ventilation - Latest WDOH approval, AIR 99-1102, for the

Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

-Removal and/or installation of pit covers - General Controls.

-Inspection of pits, vaults, and tanks - General Controls.

-Removal and disposition of excess equipment and waste in pits, risers, and tanks - ALARACT 15, and ALARACT 4.

-Decontamination activities - General Controls.

-Measurement of liquid level and sludge levels in tanks and sumps - General Controls.

-Sampling activities in pits, vaults, and tanks including chemical addition and/or waste sampling to determine Double Shell Tank waste acceptance - ALARACT 7 and ALARACT 1.

-Facility Equipment Activities: installation, disconnection, repair, replacement, and/or leak testing, of new and existing facility equipment (valves, jumpers, pumps, leak detectors, or other instrumentation/equipment) - ALARACT 4, and ALARACT 15.

-Modifications, maintenance, and/or isolation and sealing of existing in route pits, vaults and piping (drain and transfer lines) to support and/or installation of new transfer lines - General Controls.

-Excavation - ALARACT 5, and/or WDOH approved Site Wide Guzzler NOC (Air 98-1215), or the most current NOC approved for Guzzler use.

-Installation of permanent power to 244-CR Vault Facility - ALARA.

-Installation of passive breather filter assembly - ALARACT 16.

-Operation of a portable exhauster at 244-CR vault for ventilation - ALARA.

-New waste transfer system, waste staging/consolidation - General Controls.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	6.85E-06	Am - 241	3.13E-03	Am - 243	3.96E-05
Ba - 137 m	6.41E+03	C - 14	3.62E-02	Cd - 113 m	1.99E-02
Cm - 242	8.48E-05	Cm - 243	5.01E-04	Cm - 244	9.49E-03
Co - 60	1.31E-03	Cs - 134	4.22E-04	Cs - 137	6.78E+03
Eu - 152	5.31E-02	Eu - 154	7.09E+00	Eu - 155	1.22E+01
H - 3	3.57E-01	I - 129	6.95E-05	Nb - 93 m	8.10E-03
Ni - 59	1.88E-01	Ni - 63	1.82E+01	Np - 237	1.75E-01
Pa - 231	3.19E-07	Pu - 238	1.75E-01	Pu - 239	7.01E+00
Pu - 240	1.02E+00	Pu - 241	3.66E+00	Pu - 242	8.89E+00
Ra - 226	5.30E-06	Ra - 228	4.68E-05	Ru - 106	1.29E-06
Sb - 125	1.80E-03				

		Se - 79	1.88E-02	Sm - 151	6.55E+00
Sn - 126	2.69E-03	Sr - 90	3.02E+04	Tc - 99	1.63E+00
Th - 229	3.11E-06	Th - 232	3.53E-05	U - 232	2.61E-03
U - 233	1.01E-02	U - 234	1.72E-01	U - 235	7.61E-03
U - 236	1.95E-03	U - 238	5.05E-03	Y - 90	3.02E+04
Zr - 93	6.85E-03				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.

Emission Unit ID: 714

200E P-244CR-003

244-CR Vault Passive Filter B

This is a MINOR, PASSIVELY ventilated emission unit.

244-CR VAULT

Emission Unit Information

Stack Height: 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a building/facility passive breather filter that is used to ventilate building and facility operations such as but not limited to process vessels, contaminated rooms, cells, glove boxes, hoods, abandoned facilities awaiting decommissioning, and vaults that support tank farm operations, maintenance, and surveillance activities for tank farms. Entry into the building/facility consists of activities to support current surveillance, maintenance, operations, decommissioning, decontamination, and cleanup activities. Many of the activities other than normal surveillance, maintenance, and operation support will be or are regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
244-CR Vault Isolation and Interim Stabilization	AIR 09-902	9/15/2009	685

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.10E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.82E+01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Sump Intrusion Mitigation:

Sump intrusion mitigation is limited to cells 001, 002, 003, and 011 only. From time to time if intrusion of precipitation and snow melt gets into the sumps, the sumps will need to be pumped. In order to accommodate this, submersible pump assemblies will be installed in each of the four CR Vault Cells. The pump assemblies will be installed on top of existing 6 inch riser extensions on cells 001, 002, 003, and 011. Riser extensions may be

installed, or replaced if necessary. These extensions will be installed and/or removed as follows:

- the pit covers will be removed,

- above grade piping will be cut and capped,

- leak detectors and two zip cords will be removed,

- the riser extensions will be installed and/or removed remotely from a platform over the pit, and

- a new pit cover will be installed.

The sumps will be pumped by connecting a transfer line to a ventilated tank or to the Tanker Truck permitted under AOP Emission Unit Number 888 and licensed under WDOH NOC ID Number 696. The transfer line will be a hose-in sleeve line. The other end of the transfer line will be attached to the pump assembly on the first CR Vault cell to be pumped. After the first cell is pumped, flush water will be added and pumped to flush the system. Then the hose will be relocated to the next cell's pump assembly. The process will be repeated until all the cells are pumped. The CR Vault breather filter will not be modified and will be open during pumping. After the pumping is complete, the transfer line and pumps will be removed and disposed of as mixed waste. The pit foam covering will also be replaced to prevent, or at best minimize intrusion of precipitation and snow melt.

A fixative shall be applied with the pit covers on. The fixatives shall be applied to pit surfaces through a port in the pit cover using a 'whirly' or by fogging. A hand held sprayer is used to apply fixatives within the pit when the pit cover is off.

Temporary power installation will be limited to meet the needs to support the work described in this NOC. Temporary installations can be removed when no longer needed.

General Controls for Sump Intrusion Mitigation:

The general controls for sump intrusion mitigation is limited to cells 001, 002, 003, and 011 only. The required controls for each of the following actions are delineated by the specified ALARACT:

- ALARACT 1—Tank Farm ALARACT Demonstration for Riser Preparation/Opening.

- ALARACT 4—Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste.

- ALARACT 5—Tank Farm ALARACT Demonstration for Soil Excavation (using hand tools).

- ALARACT 6—Tank Farm ALARACT Demonstration for Pit Access.

- ALARACT 7—Tank Farm ALARACT Demonstration for Tank Waste Grab Sampling.

- ALARACT 11—Tank Farm ALARACT Demonstration for Waste Transfers.

- ALARACT 12—Tank Farm ALARACT Demonstration for Packaging and Transportation of Equipment and Vehicles.

- ALARACT 13—Tank Farm ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment.

- ALARACT 14—Tank Farm ALARACT Demonstration for Pit Work.

- ALARACT 15—Tank Farm ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal.

The activities performed at the 244-CR Vault Facility, ER-153 and/or 244-A Lift Station include:

Work Area Preparation:

- Miscellaneous work including equipment delivery, movement, set up and maintenance in the general work area around the 244-CR Vault Facility.

- Construction and take down of open top containment tents (bullpens) over the facility vault area.

- Installation of Portable/Temporary Radioactive Air Emission Unit(s) (PTRAEUs).

- Installation of portable 1,000 cubic feet per minute (cfm) exhauster.

- Removal and/or installation of vault foam covering.

- Application of fixative at pit interior.

- Temporary power installation.

Facility/Interim Stabilization Work:

- Operation of PTRAEU for bullpen ventilation.

- Removal and/or installation of pit covers.

- Inspection of pits, vaults, and tanks.

- Removal and disposition of excess equipment and waste in pits, risers, and tanks.

- Decontamination activities.

- Measurement of liquid level and sludge levels in tanks and sumps.

- Sampling activities in pits, vaults, and tanks including chemical addition and/or waste sampling to determine Double Shell Tank waste acceptance.

Facility Equipment Activities:

- Installation, disconnection, repair, replacement, and/or leak testing, of new and existing facility equipment (valves, jumpers, pumps, leak detectors, or other instrumentation/equipment).

- Modifications, maintenance, and/or isolation and sealing of existing risers, pits, vaults and incoming and/or outgoing piping (drain and transfer lines) from 244-CR Vault or connected facility.

Excavation:

- Installation of permanent power to 244-CR Vault Facility.

- Installation/Operation of Passive Breather Filter Assembly.

Waste Transfer and Support Activities:

- Operation of 1,000 cfm portable exhauster at 244-CR Vault.

- New waste transfer system, waste staging/consolidation.

Miscellaneous activities shall include:

- Construction and take down of open top contaminant tents over the facility vault area.

- Open top containment tents (bullpens) shall be constructed over the facility pit area to prevent potential airborne contamination from the effected work area to the environment. Two bullpens shall be erected around two instrumentation pits at the 244-CR Vault. Upon completion of the first pit's work, the bullpens shall be relocated to the other two pits and their work will be completed.

- Installation of Portable/Temporary Radioactive Air Emission Unit(s) (PTRAEUs)

- A Portable/Temporary Radioactive Air Emission Unit (2,000 cfm) or units (1,000 cfm each) shall be installed to ventilate the bullpens during activities that require work in the pits, cells and tank vault area prior to performing waste transfer activities. One thousand cfm PTRAEUs, if used, shall be directly connected to individual bullpens, while a 2,000 PTRAEU if used, shall be connected to two bullpens. Movement and installation of the PTRAEU can be performed to facilitate ventilation for the four vaults of the 244-CR Vault Facility. The PTRAEU shall operate intermittently (during work activities) and will be operated in accordance with the latest WDOH approval, AIR 99-1102, for the Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

A portable 1,000 cfm exhauster shall be installed to ventilate the 244-CR Facility vaults and tanks during waste transfer activities. This exhauster shall operate intermittently to support waste transfer and support activities and shall monitor air emissions. The exhauster shall be piped into the existing 244-CR facility ventilation system upstream of the existing (non-operating) exhauster, 296-C-05 and HEPA filters. The existing 244-CR Facility exhaust system shall be isolated and not used. Tie in of the 1,000 cfm exhauster to the existing exhaust system shall be in accordance with ALARACT 16, Tank Farm ALARACT Demonstration for Work on Potentially Contaminated Ventilation System Components. After the waste transfer is completed, the exhauster shall be removed in accordance to the requirements of ALARACT 16.

A foam covering has been placed over the 244-CR Vault area to prevent intrusion of precipitation and snowmelt. In order to gain access to the pit cover (metal) plates or concrete cover blocks, sections of the foam shall be removed, packaged, transported and disposed of. ALARACT 4, Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste shall be used to properly disposition the removed foamed covering. Radiation control technicians (RCT) shall monitor the affected work area while the foam covering is being removed. The foam covering shall be replaced after work is complete, as part of intrusion prevention measures completed by the project following waste transfer activities.

Operation of PTRAEU for Bullpen Ventilation.

Ventilation of the bullpens during pre waste transfer tank activities and prior to the installation of the 1,000 cfm portable exhauster shall be accomplished with the use of PTRAEU(s). The PTRAEU(s) shall be operated in accordance with the latest WDOH approval, AIR 99-1102, for the Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

Concrete cover key blocks are removed first, and only blocks necessary to perform intended work are removed. Consideration is given to sliding blocks to minimize the number of blocks to be removed. As discussed in the following, pit covers are decontaminated and/or covered with fixative before removal. Pit Covers are raised a minimum distance to safely allow a radiation protection technician to perform a dose rate and contamination survey. Pit covers are wrapped in plastic and set down in a specially prepared lay-down area. On completion of activities, the plastic wrap is removed from the pit covers and the pit covers are re-installed in their original position and orientation. Post-job surveys are performed.

Inspections, such as visual, video, or nondestructive inspections, shall be performed with pit covers in place (for pit with access ports) or removed. The pit cover design, historical inspection information, and ALARA

information shall be used to determine whether the inspection shall be performed manually (with pit cover removed) or remotely with a camera and the pit covers in place.

Excess equipment and debris currently located in the 244-CR vault pits, and in-tank equipment shall be removed to accommodate new waste transfer equipment and piping. Excess equipment shall be replaced with replacement in kind equipment, as necessary.

To facilitate the removal and disposition of these items, size reduction and decontamination activities shall be utilized. Size reduction activities shall include cutting up unusable equipment (usually jumpers/blanks) remotely, using hydraulic shears or low revolutions per minute portable band saws. All size reduction activities shall be performed in accordance with ALARACT Demonstration 15, TWRS ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal.

Disposition of excess equipment and waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

Removable contamination in the accessible portions of the pit is reduced to less than 100,000 disintegrations per minute/100 square centimeters beta/gamma and 2,000 disintegrations per minute/100 square centimeters alpha by washing, or an approved fixative is applied to pit surfaces. Initial washing with a low pressure (125 pounds per square inch gauge), or high pressure (3,000 pounds per square inch gauge) 'whirly' is accomplished through a port in the pit cover blocks. Additional decontamination activities (with the cover block off) include the use of chemicals, peel and strip paints, water, or manual scrub brushes.

After a section of equipment has been washed it shall be pulled into plastic sleeving and sealed by horse tailing and taping.

Liquid and sludge levels are determined using zip cords or other appropriate means that shall not disturb the waste more than zip cords.

Sampling activities shall be performed in the tank and sump area of 244-CR Vault by way of risers in the riser pit in accordance with ALARACT 7, "Tank Farm ALARACT Demonstration For Tank Waste Grab Sampling." Radiological controls for riser preparation/opening listed in ALARACT 1, "Tank Farm ALARACT Demonstration for Riser Preparation/opening," shall be followed.

The waste transfer processes shall transfer waste from tanks CR-011, CR-001, CR-002 and CR-003 and sumps within 244-CR Vault Facility to a staging tank within the 244-CR Facility. The transfer system to consolidate the waste from individual tanks consists of above ground piping of a hose in hose with leak detection at each tank's pit being utilized to support the transfer line. Mixing and dilution of the waste may take place at the receiving tank or within the transfer lines directly. The transfer system may include equipment pump skids and shall include appropriate connections to the transfer lines to accommodate chemical and water addition to the 244-CR Facility tanks and mixing prior to transfer to the designated Double Shell Tank (DST).

Before entry into a pit, an evaluation is made by engineering and/or operations personnel to determine the transfer routing configuration after pit work is complete. On removal of cover blocks, a visual inspection of pit contents is made to verify present configuration.

Tools such as impact wrenches, T-bars, and pike poles are used to repair or replace pit equipment. All equipment coming out of the pit is wrapped in plastic or otherwise contained or decontaminated for reuse or disposal. Removable contamination on the outer-most container shall not exceed 1,000 disintegrations per minute/100 square centimeters beta/gamma and 20 disintegrations per minute/100 square centimeters alpha before removal from the bullpen. Disposition of non reusable equipment waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

Jumper work shall be preceded by flushing the appropriate transfer lines with water. Jumper work is accomplished remotely, using a crane to maneuver heavy equipment and parts. Installation, disconnection, and/or changing jumpers/blanks are accomplished by slowly loosening the jumper/blank at the connector head. The required jumper/blank is positioned and tightened to the new connector heads. If the process line or equipment

being worked on is connected physically to other unnecessary transfer lines, or if the line is to be left unused, a cap, blank, or equivalent is installed on all open nozzles not connected to jumpers.

Leak testing of newly installed jumpers/blanks shall be performed with pressurized water before initiating waste transfers. Occasionally, a jumper leak test is performed during the initial stages of the transfer. In either case, cover blocks shall be in place before leak testing is performed.

Cutting up unusable pit equipment (usually jumpers/blanks) is accomplished remotely using hydraulic shears or low revolutions per minute portable band saws. Cutting activities shall be performed in the bullpen or in glovebags. The goal shall be to maintain a contamination level equal to or less than 1,000 dpm/100 cm2 beta gamma and 20 dpm/100 cm2 alpha, during cutting activities, but may not always be attainable. RCT coverage shall be provided. Should contamination levels exceed 1,000-dpm/100 cm2 additional sleeving, or use of a glove bag shall be used and/or decontamination activities performed to lower the levels in accordance with ALARA. Welding (if required) shall commence once removable contamination levels in the cut and weld area are reduced to ALARA. Size reduction (cutting) activities shall be performed in accordance with ALARACT Demonstration 15, TWRS ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal. To ensure that water intrusions or potential residual waste in piping are eliminated from the facility, existing piping and transfer lines to and from the 244-CR Vault facility shall be blanked, grouted, or sealed. The isolation includes activities such as installing plugs, caps, blind flanges, or grouting. Isolations may occur at the 244-CR riser pit area or at the other end of the pipe in a diversion or valve box, at the ER153 or the 244A Lift Station.

Modifications to existing in-route pits, vaults and piping shall be required to establish the waste transfer route or to ensure the integrity of the system prior to waste transfer. These modifications can include but are not limited to, removal of existing parts and replacement with like parts, installation of new jumpers, or blanking off of equipment. When possible existing blanks shall be utilized. Pipe cutting shall be minimized in compliance with ALARA. If it is determined that the installation of a new above ground transfer line would be the best engineering method to establish a waste transfer route, a temporary transfer route shall be established following existing design and installation procedures. This temporary route will be either above ground or in a shallow trench. If a trench is required excavation shall be performed as described under that activity in this NOC.

Pit drains are checked using water from a tanker truck or another source. Water at a flow rate of approximately 20 gallons per minute is added to a pit drain line and subsequently monitored to verify the pit drains are free of restrictions. At times it might be necessary to pump the DCRT that receives the water after the water passes through the pit drain if the volume of test water approaches the capacity of the DCRT.

Either flushing with water and/or using a retrieval tool to remove debris from the drain are used to clear plugged drains. Water supply valves are opened slowly to minimize splashing. Pressures above 50 pounds per square inch gauge require approval from the engineering organization. Cover blocks shall remain in place and work is accomplished through a penetration in the cover block.

The waste transfer operations involve the pumping of liquid waste that contains dissolved solids. These solids can precipitate out of solution anywhere in the transfer path and cause blockage. If blockage is detected in the system, flushing the lines with hot water is necessary. The hot water is introduced to the system to be flushed through a pressure manifold by piping connected directly to a jumper or nozzle. These operations shall be performed with the pit covers on.

To ensure that water intrusions are eliminated from the facility, a foam covering will be placed over the 244-CR Vault area after completion of isolation activities.

Other techniques to free blockages could include pressurization, temporary jumpers, and hydraulic scouring. All piping connections are designed to be leak tight and the pit cover block shall be installed before pressurization. If pressurization beyond that obtained from the tank farms water system or supply truck (i.e., approximately 150 pounds per square inch gauge) is necessary to remove blockage, an engineering evaluation shall be performed to determine the maximum allowable pressure for operation.

Excavation:

Excavation may be required to support installation of ventilation, electrical support and waste transfer equipment. Modifications to existing in route pits, vaults and piping and/or to support installation of new waste transfer lines from the 244-CR Facility to the identified DST may require excavation. Soil excavation activities will be performed in accordance with ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools), and will follow the radiological controls specified in that ALARACT.

Any Guzzler excavations in contamination areas will be performed in accordance with the December 18, 1998, WDOH approved Site Wide Guzzler NOC (Air 98-1215), or the most current NOC approved for Guzzler use. Excavation of contaminated soils using heavy equipment shall follow the requirement of Site Wide Guzzler NOC.

Soil excavation outside the tank farm fence also may be performed with heavy equipment.

Soil will be excavated around the 244-CR vault facility to install new piping, equipment slabs, and new waste transfer system support equipment. It is expected that about 1,000 cubic yards may be excavated, with about 600 cubic yards from inside the tank farm. Backfill shall be from the original removed soil or non-contaminated controlled density fill (sand, water and a small amount of cement).

Current power within the 244-CR Vault Facility is limited. To provide power for new equipment installed under the project, the existing power distribution system shall be upgraded. Upgrades shall involve modification to the existing Motor Control Center (MCC), installation of equipment control panels, and installation of new conduits.

A compliant passive breather filter shall be installed to ventilate the 244-CR Facility vaults and tanks once waste transfer activities are completed. The passive breather filters shall be installed at two locations in the 244-CR facility. A 1,000 cfm HEPA filter shall be installed at the air inlet assembly (previously attached to the evaporative cooler) and a 200 cfm HEPA filter shall be installed upstream of the existing HEPA filter pit. Butterfly valves in the ventilation system just downstream of where the filters shall be installed can be shut to prevent any emission from the facility during filter installation. Installation of the filters shall be performed in accordance with ALARACT Demonstration 16, TWRS ALARACT Demonstration for Work on Potentially Contaminated Ventilation System Components.

During waste transfer and support activities the tank and vault air space shall be actively ventilated by a temporary ventilation system. The temporary ventilation system shall consist of a portable exhauster that shall be equipped with compliant monitoring and sampling equipment. The purpose of the exhauster is to ensure potential airborne contamination from the pits, cells, or process tanks, is not being released to the environment. Operation of the 1,000 cfm portable exhauster is considered an emissions control.

New waste transfer system, waste staging/consolidation.

The planned transfer system can utilize some existing equipment along with installation of new piping and equipment at 244-CR, ER-153 and/or 244-A Lift Station. Maintenance of the transfer system may be required during the waste staging/consolidation. Equipment, which may require on going maintenance includes but is not limited to leak detection and pump system equipment. The waste can be staged/consolidated in one or two of the 244-CR Facility tanks (CR-001, CR-002, CR-003 and CR-011) prior to transfer to a DST.

The following controls are used for the pit activities:

General Controls:

1. Pre-job and post-job radiation surveys are performed by radiation protection technicians. Radiation work permits specify permissible occupational radiological limits during activities. Radiation control technicians' survey and release equipment, inspect and approve required containment, and provide radiological surveys to verify compliance to radiation work permit limits.

2. Pit work is shut down (or not initiated) when sustained wind speeds exceed 25 miles per hour as measured in the field and/or reported by the Hanford Meteorological Station.

3. Fixatives shall be applied inside the pit (with cover blocks on or off) or accessible portions of the pit decontaminated to less than 100,000 disintegrations per minute/100 square centimeters beta-gamma and 2,000 disintegrations per minute/100 square centimeters alpha.

4. When cover blocks are removed, a fall protection handrail is installed. This handrail is draped in plastic forming a contamination barrier. The plastic extends to the top of the pit and is taped or sealed at the top of the pit. Decontamination of the containment barrier is conducted as required by the job specific radiation work permit.

5. Radiation control technicians monitor the affected work area when the vault foam covering is removed, when jumpers and equipment are being removed from risers and nozzles, and when risers are entered for sampling of tanks and sumps. Jumpers removed from the pit are drained of free liquid and decontaminated or contained before removal. The outer-most container shall not exceed 1,000 disintegrations per minute/100 square centimeters beta/gamma and 20 disintegrations per minute/100 square centimeters alpha. If these limits are exceeded, surfaces shall be decontaminated. Disposition of non reusable equipment waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

6. A bullpen designed to minimize the top opening shall be used. Pit covers or cover blocks will be removed as necessary. If the bullpen is to be left unattended at any time, a temporary cover is placed over the pit or the pit covers or cover blocks are reinstalled. Two tents shall be erected over two pits. Upon completion of the work in the first two 244-CR Facility instrumentation pits, the tents will be relocated to the other 244-CR facility instrumentation pits.

7. PTRAEU(s) shall actively ventilate the bullpens during activities that require work in the pits (after removal of the cover blocks) to control radiological releases. The PTRAEU(s) shall operate intermittently and shall be operated in accordance with the latest revision to the WDOH approved. Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

8. A compliant exhauster skid shall ventilate the process cells and tanks during waste transfer activities. The exhauster shall maintain a negative pressure under the cover blocks and prevent contaminants from reaching the environment. The exhauster skid shall be connected to the existing exhaust ductwork with rigid or flexible ductwork.

9. The 1,000 cfm exhauster shall be equipped with a two-stage HEPA filter, which meets the requirements of ASME AG-1, Section FC and shall be tested annually to requirements of ASME AG-1. The HEPA filters shall have an efficiency of 99.95 percent for 0.3-micron median diameter. Each filter housing shall meet the applicable sections of ASME N509 and the test requirement of ASME N510. The exhaust stack houses a Generic Effluent Monitoring System (GEMS) that contains an air velocity probe and the air sampling probe.

10. The breather filter shall consist of a housing that contains a HEPA filter, an outlet screen, and a small seal loop. Air flowing to and from the 244-CR Facility shall pass horizontally through the filter and vertically through the downward-facing exit weather hood. Seal loops, installed in the exhaust lines, are designed as a safety feature to prevent unlikely accident in which an over pressurization occurs when the HEPA filter is isolated for occasional (infrequent) maintenance.

Specific Controls include:

-Installation of portable 1,000 cfm exhauster shall use ALARACT 16.

-Removal and/or installation of vault foam covering - ALARACT 4.

-Application of fixative at pit interior - see General Controls.

-Temporary power installation - ALARA.

-Operation of PTRAEU for bullpen ventilation - Latest WDOH approval, AIR 99-1102, for the

Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

-Removal and/or installation of pit covers - General Controls.

-Inspection of pits, vaults, and tanks - General Controls.

-Removal and disposition of excess equipment and waste in pits, risers, and tanks - ALARACT 15, and ALARACT 4.

-Decontamination activities - General Controls.

-Measurement of liquid level and sludge levels in tanks and sumps - General Controls.

-Sampling activities in pits, vaults, and tanks including chemical addition and/or waste sampling to determine Double Shell Tank waste acceptance - ALARACT 7 and ALARACT 1.

-Facility Equipment Activities: installation, disconnection, repair, replacement, and/or leak testing, of new and existing facility equipment (valves, jumpers, pumps, leak detectors, or other instrumentation/equipment) - ALARACT 4, and ALARACT 15.

-Modifications, maintenance, and/or isolation and sealing of existing in route pits, vaults and piping (drain and transfer lines) to support and/or installation of new transfer lines - General Controls.

-Excavation - ALARACT 5, and/or WDOH approved Site Wide Guzzler NOC (Air 98-1215), or the most current NOC approved for Guzzler use.

-Installation of permanent power to 244-CR Vault Facility - ALARA.

-Installation of passive breather filter assembly - ALARACT 16.

-Operation of a portable exhauster at 244-CR vault for ventilation - ALARA.

-New waste transfer system, waste staging/consolidation - General Controls.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	6.85E-06	Am - 241	3.13E-03	Am - 243	3.96E-05
Ba - 137 m	6.41E+03	C - 14	3.62E-02	Cd - 113 m	1.99E-02
Cm - 242	8.48E-05	Cm - 243	5.01E-04	Cm - 244	9.49E-03
Co - 60	1.31E-03	Cs - 134	4.22E-04	Cs - 137	6.78E+03
Eu - 152	5.31E-02	Eu - 154	7.09E+00	Eu - 155	1.22E+01
H - 3	3.57E-01	I - 129	6.95E-05	Nb - 93 m	8.10E-03
Ni - 59	1.88E-01	Ni - 63	1.82E+01	Np - 237	1.75E-01
Pa - 231	3.19E-07	Pu - 238	1.75E-01	Pu - 239	7.01E+00
Pu - 240	1.02E+00	Pu - 241	3.66E+00	Pu - 242	8.89E+00
Ra - 226	5.30E-06	Ra - 228	4.68E-05	Ru - 106	1.29E-06
Sb - 125	1.80E-03				

		Se - 79	1.88E-02	Sm - 151	6.55E+00
Sn - 126	2.69E-03	Sr - 90	3.02E+04	Tc - 99	1.63E+00
Th - 229	3.11E-06	Th - 232	3.53E-05	U - 232	2.61E-03
U - 233	1.01E-02	U - 234	1.72E-01	U - 235	7.61E-03
U - 236	1.95E-03	U - 238	5.05E-03	Y - 90	3.02E+04
Zr - 93	6.85E-03				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.

Emission Unit ID: 716

200E P-241C-002

241-C-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the SST to vent to the atmosphere under tank farm storage, maintenance, and operations. The tanks store radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The tanks are scheduled for waste retrieval, decommissioning, and eventual closure under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

Emission Unit ID: 717

200E P-241C-003

241-C-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the SST to vent to the atmosphere under tank farm storage, maintenance, and operations. The tanks store radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The tanks are scheduled for waste retrieval, decommissioning, and eventual closure under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

Emission Unit ID: 735

200E P-296A044-001

296-A-44

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AN TANK FARM

Emission Unit Information

Stack Height: 28.13 ft. 8.57 m. Stack Diameter 0.84 ft. 0.26 m.

Average Stack Effluent Temperature: 110 degrees Fahrenheit. 43 degrees Celsius.

Average Stack ExhaustVelocity: 91.31 ft/second. 27.83 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	
	HEPA	2	In series.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B, Method 114	Sr-90, Cs-137, Am-241, C-14, Y90, Cs-134, Eu-154, Ac-227, Pa-231, U-233, Pu-238, Pu-240, Pu-241, Cm-244.	Continuous

Sampling Requirements Record sample collected biweekly

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241 AN Tank Farm during storage, maintenance and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-A-45. The emission unit operates intermittenlty.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of New Ventilation Systems in AN and AW Tank Farms	AIR 06-1060	10/5/2006	706

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.60E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.33E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 296-A-44 and 296-A-45 shall ventilate the 241-AN Double Shell Tank (DST) Farm which consists of

seven individual DSTs. The 296-A-46 and 296-A-47 shall ventilate the 241-AW Double Shell Tank (DST) Farm which consists of six individual DSTs. The DSTs are fabricated as two concentric tanks surrounded by a concrete shell. The inner tank containing the waste is 75 feet in diameter and 46.8 feet high at the crown. Each tank stores 1.14E6 gallons. The DSTs are used for storage, treatment, retrieval, and disposal of the waste contained in the tanks, as well as transfers to the Waste Treatment Plant.

The 296-A-44, 296-A-45, 296-A-46 and 296-A-47 ventilation systems serve to remove heat, and serve as containment systems for radioactive particulates present in the tank headspace, they ventilate/remove flammable gases and vapors that evolve from the liquid surface in the DSTs. The ventilation systems do this by drawing air into the tank vapor space. After the air leaves the vapor space the air is conditioned by the ventilation system. It removes entrained moisture, the relative humidity is reduced, and particulates are filtered out. Before discharge of this air to the atmosphere from the stack, the air is monitored and sampled for radionculide particulates.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.30E+02	Am - 241	1.03E+05	Am - 243	1.37E+01
Ba - 137 m	1.75E+07	C - 14	5.07E+02	Cd - 113 m	7.50E+03
Cm - 242	7.57E+01	Cm - 243	8.35E+00	Cm - 244	2.36E+02
Co - 60	4.46E+03	Cs - 134	1.81E+04	Cs - 137	1.85E+07
Eu - 152	1.06E+03	Eu - 154	4.63E+04	Eu - 155	4.56E+04
H - 3	2.71E+03	I - 129	9.18E+00	Nb - 93 m	1.82E+03
Ni - 59	7.70E+02	Ni - 63	7.26E+04	Np - 237	6.20E+01
Pa - 231	2.70E+02	Pu - 238	3.04E+03	Pu - 239	2.92E+04
Pu - 240	5.25E+03	Pu - 241	6.40E+04	Pu - 242	4.05E-01
Ra - 226	2.38E+02	Ra - 228	3.87E+01	Ru - 106	1.02E+03
Sb - 125	2.06E+04	Se - 79	5.70E+01	Sm - 151	1.53E+06
Sn - 126	2.40E+02	Sr - 90	2.30E+07	Tc - 99	6.89E+03
Th - 229	2.49E+01	Th - 232	6.16E+00	U - 232	2.79E+01
U - 233	4.48E+02	U - 234	6.76E+01	U - 235	2.58E+00
U - 236	2.87E+00	U - 238	5.61E+01	Y - 90	2.30E+07
Zr - 93	1.86E+03				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.
5) The Annual Possession Quantity shall be tracked on a WDOH approved log.
6) The ductwork between the de-entrainer and heater, along with the filter housings shall be insulated.
7) The exhauster shall be operational during all waste transfer, waste disturbing, or particulate generating activities.
8) Prior to operation of the ventilation system a leak test of the entire train including the ductwork from the exit of the tank to the entrance to the stack shall be performed meeting the requirements called out in ASME AG-1.
9) The effluent monitoring and sampling system shall meet the requirements of ANSI N13.1-1999. A written technical basis document required by Section 4 of ANSI N13.1-1999 shall be provided to WDOH for review and approval.

Emission Unit ID: 736

200E P-296A045-001

296-A-45

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AN TANK FARM

Emission Unit Information

Stack Height: 28.13 ft. 8.57 m. Stack Diameter 0.84 ft. 0.26 m.

Average Stack Effluent Temperature: 110 degrees Fahrenheit. 43 degrees Celsius.

Average Stack ExhaustVelocity: 91.31 ft/second. 27.83 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	
	HEPA	2	In series.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B, Method 114	Sr-90, Cs-137, Am-241, C-14, Y90, Cs-134, Eu-154, Ac-227, Pa-231, U-233, Pu-238, Pu-240, Pu-241, Cm-244.	Continuous

Sampling Requirements Record sample collected biweekly

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241 AN Tank Farm during storage, maintenance, and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-A-44. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of New Ventilation Systems in AN and AW Tank Farms	AIR 06-1060	10/5/2006	706

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.60E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.33E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 296-A-44 and 296-A-45 shall ventilate the 241-AN Double Shell Tank (DST) Farm which consists of

seven individual DSTs. The 296-A-46 and 296-A-47 shall ventilate the 241-AW Double Shell Tank (DST) Farm which consists of six individual DSTs. The DSTs are fabricated as two concentric tanks surrounded by a concrete shell. The inner tank containing the waste is 75 feet in diameter and 46.8 feet high at the crown. Each tank stores 1.14E6 gallons. The DSTs are used for storage, treatment, retrieval, and disposal of the waste contained in the tanks, as well as transfers to the Waste Treatment Plant.

The 296-A-44, 296-A-45, 296-A-46 and 296-A-47 ventilation systems serve to remove heat, and serve as containment systems for radioactive particulates present in the tank headspace, they ventilate/remove flammable gases and vapors that evolve from the liquid surface in the DSTs. The ventilation systems do this by drawing air into the tank vapor space. After the air leaves the vapor space the air is conditioned by the ventilation system. It removes entrained moisture, the relative humidity is reduced, and particulates are filtered out. Before discharge of this air to the atmosphere from the stack, the air is monitored and sampled for radionculide particulates.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.30E+02	Am - 241	1.03E+05	Am - 243	1.37E+01
Ba - 137 m	1.75E+07	C - 14	5.07E+02	Cd - 113 m	7.50E+03
Cm - 242	7.57E+01	Cm - 243	8.35E+00	Cm - 244	2.36E+02
Co - 60	4.46E+03	Cs - 134	1.81E+04	Cs - 137	1.85E+07
Eu - 152	1.06E+03	Eu - 154	4.63E+04	Eu - 155	4.56E+04
H - 3	2.71E+03	I - 129	9.18E+00	Nb - 93 m	1.82E+03
Ni - 59	7.70E+02	Ni - 63	7.26E+04	Np - 237	6.20E+01
Pa - 231	2.70E+02	Pu - 238	3.04E+03	Pu - 239	2.92E+04
Pu - 240	5.25E+03	Pu - 241	6.40E+04	Pu - 242	4.05E-01
Ra - 226	2.38E+02	Ra - 228	3.87E+01	Ru - 106	1.02E+03
Sb - 125	2.06E+04	Se - 79	5.70E+01	Sm - 151	1.53E+06
Sn - 126	2.40E+02	Sr - 90	2.30E+07	Tc - 99	6.89E+03
Th - 229	2.49E+01	Th - 232	6.16E+00	U - 232	2.79E+01
U - 233	4.48E+02	U - 234	6.76E+01	U - 235	2.58E+00
U - 236	2.87E+00	U - 238	5.61E+01	Y - 90	2.30E+07
Zr - 93	1.86E+03				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.
5) The Annual Possession Quantity shall be tracked on a WDOH approved log.
6) The ductwork between the de-entrainer and heater, along with the filter housings shall be insulated.
7) The exhauster shall be operational during all waste transfer, waste disturbing, or particulate generating activities.
8) Prior to operation of the ventilation system a leak test of the entire train including the ductwork from the exit of the tank to the entrance to the stack shall be performed meeting the requirements called out in ASME AG-1.
9) The effluent monitoring and sampling system shall meet the requirements of ANSI N13.1-1999. A written technical basis document required by Section 4 of ANSI N13.1-1999 shall be provided to WDOH for review and approval.

Emission Unit ID: 737

200E P-241C103-001

241-C-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height 15.00 ft. 4.57 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter on the outside of the screen covering the outlet vent.

Additional Requirements

Contamination surveys of breather filters with stack extensions will be performed on the downstream side of the filter or on the outside of the screen covering the outlet of vent (if one exists) or by removing the test port cap downstream of the HEPA filter, surveying the cap and inserting smear media (e.g. swab, masslin) in the opening and smearing the interior ducting surface on the opposite side of the test port cap opening.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 738

200E P-244A-002

244-A Primary HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244-A DCRT

Emission Unit Information

Stack Height 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114(3)	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a double contained receiver tank (DCRT) passive breather filter ventilation system used to support tank farm operations, such as waste retrieval and operation support activities for the 241-A Tank Farm. The tank stored radioactive waste during transfer operations. Any activity other than temporary storage and normal operation support will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit has a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Isolation and Closure of Exhaust Stacks 296-A-25, 296-B-28, 296-S-22 and 296-T-18	AIR 08-1107	11/10/2008	697

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.20E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.20E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

244-S DCRT (296-S-22 STACK)

Passive Ventilation Breather Filter System Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a

set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will allow vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

The isolation and removal of the HEPA filter bank located in the 244-S DCRT filter pit will require the deactivation of the HEPA filter bank instrumentation and alarms, the removal and disposal of the HEPA filter bank, and the installation of the filter pit duct jumper assembly, in accordance with ALARACT Demonstrations 6, 14, and 16. The 296-S-22 exhauster is equipped with a HEPA filter bank inside the filter pit. The HEPA filter bank is attached to three nozzles in the filter pit: one nozzle to the catch tank, one nozzle to the annulus, and one nozzle to the ventilation exhaust ductwork. The HEPA filter bank will be disconnected from the nozzles and removed for disposal. A filter pit duct jumper assembly (4" schedule 40 pipe) will be connected to the catch tank nozzle and ventilation exhaust ductwork nozzle to provide the ventilation path to the newly installed passive breather filters. The third nozzle to the annulus will be closed in the filter pit. The filter pit duct jumper assembly will be fabricated in accordance with ASME B31.3 and tested in accordance with ASME AG-1.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-S DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system in accordance with ALARACT 16. Disconnection is the physical disconnection and removal of wires from the power source. Pit entries are not required to disconnect power or isolate instrumentation.

296-S-22 Stack Isolation:

The 296-S-22 stack will be isolated via mechanical isolations. Blank flanges will be installed on the duct end and on the suction side of the exhaust fan. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

244-TX DCRT (296-T-18 STACK)

Passive Ventilation Breather Filter Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will collect potential airborne radioactive particulates from the annulus space while allowing vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter

housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

Removal of the HEPA filter bank in the 244-TX DCRT filter pit is not required. The HEPA filter bank will be isolated via closure of manual valves and the deactivation of motor-controlled valves. Above-grade duct/pipe will be capped. The associated HEPA filter bank instrumentation and alarms will be deactivated. This work will be done in accordance with ALARACT 16.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-TX DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system. Disconnection is the physical disconnection and removal of wires from the power source in accordance with ALARACT Demonstration 16. Pit entries are not required to disconnect power or isolate instrumentation.

296-T-18 Stack Isolation:

The 296-T-18 stack will be isolated via mechanical isolations. A blank flange will be installed at the suction side of the exhaust fan or at another suitable location near the filter pit outlet to the exhaust stack. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	2.04E-02	Am - 241	1.17E+01	Am - 243	3.58E-04
Ba - 137 m	2.69E+03	C - 14	4.06E-01	Cd - 113 m	1.40E+00
Cm - 242	1.19E-02	Cm - 243	6.91E-04	Cm - 244	1.26E-02
Co - 60	6.18E-01	Cs - 134	6.84E-03	Cs - 137	2.84E+03
Eu - 152	1.18E-01	Eu - 154	9.29E+00	Eu - 155	5.09E+00
H - 3	1.53E+00	I - 129	5.01E-03	Nb - 93 m	4.18E-01
Ni - 59	1.57E-01	Ni - 63	1.46E+01	Np - 237	9.67E-03
Pa - 231	4.25E-02	Pu - 238	4.84E-01	Pu - 239	9.45E+00
Pu - 240	1.57E+00	Pu - 241	1.23E+01	Pu - 242	8.61E-05
Ra - 226	3.73E-02	Ra - 228	8.82E-03	Ru - 106	8.01E-06
Sb - 125	6.95E-01	Se - 79	1.22E-02	Sm - 151	3.74E+02
Sn - 126	6.02E-02	Sr - 90	5.31E+03	Tc - 99	2.76E+00
Th - 229	4.01E-03	Th - 232	1.13E-03	U - 232	6.22E-03
U - 233	7.78E-02	U - 234	3.07E-02	U - 235	1.28E-03

U - 236	6.36E-04	U - 238	2.87E-02	Y - 90 m	5.31E+03
Zr - 93	5.03E-01				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.
5) The emissions shall be limited to 2.81E-02 mrem/year unabated and 2.81E-04 mrem/yr abated.
6) Under passive ventilation no activities shall be conducted which could generate aerosols within the 244-A DCRT.

Emission Unit ID: 740

200E P-244BX-002

244-BX Primary HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244-BX-DCRT

Emission Unit Information

Stack Height 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a double container receiver tank (DCRT) passive breather filter ventilation system used to support tank farm operations, such as but not limited to waste retrieval and operation support activities for 241 BX Tank Farm. The tanks stored radioactive waste during transfer operations. Any activity other than temporary storage and normal operation support will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Isolation and Closure of Exhaust Stacks 296-A-25, 296-B-28, 296-S-22 and 296-T-18	AIR 08-1107	11/10/2008	697

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.20E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.20E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

244-S DCRT (296-S-22 STACK)

Passive Ventilation Breather Filter System Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a

set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will allow vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

The isolation and removal of the HEPA filter bank located in the 244-S DCRT filter pit will require the deactivation of the HEPA filter bank instrumentation and alarms, the removal and disposal of the HEPA filter bank, and the installation of the filter pit duct jumper assembly, in accordance with ALARACT Demonstrations 6, 14, and 16. The 296-S-22 exhauster is equipped with a HEPA filter bank inside the filter pit. The HEPA filter bank is attached to three nozzles in the filter pit: one nozzle to the catch tank, one nozzle to the annulus, and one nozzle to the ventilation exhaust ductwork. The HEPA filter bank will be disconnected from the nozzles and removed for disposal. A filter pit duct jumper assembly (4" schedule 40 pipe) will be connected to the catch tank nozzle and ventilation exhaust ductwork nozzle to provide the ventilation path to the newly installed passive breather filters. The third nozzle to the annulus will be closed in the filter pit. The filter pit duct jumper assembly will be fabricated in accordance with ASME B31.3 and tested in accordance with ASME AG-1.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-S DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system in accordance with ALARACT 16. Disconnection is the physical disconnection and removal of wires from the power source. Pit entries are not required to disconnect power or isolate instrumentation.

296-S-22 Stack Isolation:

The 296-S-22 stack will be isolated via mechanical isolations. Blank flanges will be installed on the duct end and on the suction side of the exhaust fan. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

244-TX DCRT (296-T-18 STACK)

Passive Ventilation Breather Filter Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will collect potential airborne radioactive particulates from the annulus space while allowing vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter

housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

Removal of the HEPA filter bank in the 244-TX DCRT filter pit is not required. The HEPA filter bank will be isolated via closure of manual valves and the deactivation of motor-controlled valves. Above-grade duct/pipe will be capped. The associated HEPA filter bank instrumentation and alarms will be deactivated. This work will be done in accordance with ALARACT 16.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-TX DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system. Disconnection is the physical disconnection and removal of wires from the power source in accordance with ALARACT Demonstration 16. Pit entries are not required to disconnect power or isolate instrumentation.

296-T-18 Stack Isolation:

The 296-T-18 stack will be isolated via mechanical isolations. A blank flange will be installed at the suction side of the exhaust fan or at another suitable location near the filter pit outlet to the exhaust stack. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	4.12E-02	Am - 241	2.37E+01	Am - 243	7.23E-04
Ba - 137 m	5.43E+03	C - 14	8.19E-01	Cd - 113 m	2.83E+00
Cm - 242	2.40E-02	Cm - 243	1.39E-03	Cm - 244	2.56E-02
Co - 60	1.25E+00	Cs - 134	1.38E-02	Cs - 137	5.74E+03
Eu - 152	2.38E-01	Eu - 154	1.88E+01	Eu - 155	1.03E+01
H - 3	3.09E+00	I - 129	1.03E-02	Nb - 93 m	8.44E-01
Ni - 59	3.18E-01	Ni - 63	2.95E+01	Np - 237	1.95E-02
Pa - 231	8.58E-02	Pu - 238	9.78E-01	Pu - 239	1.91E+01
Pu - 240	3.17E+00	Pu - 241	2.48E+01	Pu - 242	1.74E-04
Ra - 226	7.54E-02	Ra - 228	1.78E-02	Ru - 106	1.62E-05
Sb - 125	1.40E+00	Se - 79	2.46E-02	Sm - 151	7.55E+02
Sn - 126	1.22E-01	Sr - 90	1.07E+04	Tc - 99	5.57E+00
Th - 229	8.09E-03	Th - 232	2.28E-03	U - 232	1.26E-02
U - 233	1.57E-01	U - 234	6.19E-02	U - 235	2.59E-03

U - 236	1.28E-03	U - 238	5.80E-02	Y - 90	1.07E+04
Zr - 93	1.02E+00				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.
5) The emissions shall be limited to 2.81E-02 mrem/yr unabated and 2.81E-04 mrem/yr abated.
6) Under passive ventilation no activities shall be conducted which could generate aerosols within the 244-BX DCRT.

Emission Unit ID: 742

200W P-244S-002

244-S Primary HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244 S-DCRT

Emission Unit Information

Stack Height 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114(3)	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a double container receiver tank (DCRT) passive breather filter ventilation system used to support tank farm operations, such as but not limited to waste retrieval and operation support activities for 241 S Tank Farm. The tanks stored radioactive waste during transfer operations. Any activity other than temporary storage and normal operation support will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit has a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Isolation and Closure of Exhaust Stacks 296-A-25, 296-B-28, 296-S-22 and 296-T-18	AIR 08-1107	11/10/2008	697

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.20E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.20E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

244-S DCRT (296-S-22 STACK)

Passive Ventilation Breather Filter System Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a

set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will allow vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

The isolation and removal of the HEPA filter bank located in the 244-S DCRT filter pit will require the deactivation of the HEPA filter bank instrumentation and alarms, the removal and disposal of the HEPA filter bank, and the installation of the filter pit duct jumper assembly, in accordance with ALARACT Demonstrations 6, 14, and 16. The 296-S-22 exhauster is equipped with a HEPA filter bank inside the filter pit. The HEPA filter bank is attached to three nozzles in the filter pit: one nozzle to the catch tank, one nozzle to the annulus, and one nozzle to the ventilation exhaust ductwork. The HEPA filter bank will be disconnected from the nozzles and removed for disposal. A filter pit duct jumper assembly (4" schedule 40 pipe) will be connected to the catch tank nozzle and ventilation exhaust ductwork nozzle to provide the ventilation path to the newly installed passive breather filters. The third nozzle to the annulus will be closed in the filter pit. The filter pit duct jumper assembly will be fabricated in accordance with ASME B31.3 and tested in accordance with ASME AG-1.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-S DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system in accordance with ALARACT 16. Disconnection is the physical disconnection and removal of wires from the power source. Pit entries are not required to disconnect power or isolate instrumentation.

296-S-22 Stack Isolation:

The 296-S-22 stack will be isolated via mechanical isolations. Blank flanges will be installed on the duct end and on the suction side of the exhaust fan. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

244-TX DCRT (296-T-18 STACK)

Passive Ventilation Breather Filter Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will collect potential airborne radioactive particulates from the annulus space while allowing vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter

housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

Removal of the HEPA filter bank in the 244-TX DCRT filter pit is not required. The HEPA filter bank will be isolated via closure of manual valves and the deactivation of motor-controlled valves. Above-grade duct/pipe will be capped. The associated HEPA filter bank instrumentation and alarms will be deactivated. This work will be done in accordance with ALARACT 16.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-TX DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system. Disconnection is the physical disconnection and removal of wires from the power source in accordance with ALARACT Demonstration 16. Pit entries are not required to disconnect power or isolate instrumentation.

296-T-18 Stack Isolation:

The 296-T-18 stack will be isolated via mechanical isolations. A blank flange will be installed at the suction side of the exhaust fan or at another suitable location near the filter pit outlet to the exhaust stack. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	2.04E-02	Am - 241	1.17E+01	Am - 243	3.58E-04
Ba - 137 m	2.69E+03	C - 14	4.06E-01	Cd - 113 m	1.40E+00
Cm - 242	1.19E-02	Cm - 243	6.91E-04	Cm - 244	1.26E-02
Co - 60	6.18E-01	Cs - 134	6.84E-03	Cs - 137	2.84E+03
Eu - 152	1.18E-01	Eu - 154	9.29E+00	Eu - 155	5.09E+00
H - 3	1.53E+00	I - 129	5.10E-03	Nb - 93 m	4.18E-01
Ni - 59	1.57E-01	Ni - 63	1.46E+01	Np - 237	9.67E-03
Pa - 231	4.25E-02	Pu - 238	4.84E-01	Pu - 239	9.45E+00
Pu - 240	1.57E+00	Pu - 241	1.23E+01	Pu - 242	8.61E-05
Ra - 226	3.73E-02	Ra - 228	8.82E-03	Ru - 106	8.01E-06
Sb - 125	6.95E-01	Se - 79	1.22E-02	Sm - 151	3.74E+02
Sn - 126	6.02E-02	Sr - 90	5.31E+03	Tc - 99	2.76E+00
Th - 229	4.01E-03	Th - 232	1.13E-03	U - 232	6.22E-03
U - 233	7.78E-02	U - 234	3.07E-02	U - 235	1.28E-03

U - 236	6.36E-04	U - 238	2.87E-02	Y - 90	5.31E-03
Zr - 93	5.03E-01				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.
5) The emissions shall be limited to 3.19E-02 mrem/yr unabated and 3.19E-04 mrem/yr abated.
6) Under passive ventilation no activities shall be conducted which could generate aerosols within the 244-S DCRT.

Emission Unit ID: 744

200W P-244TX-002

244-TX Primary HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244-TX DCRT

Emission Unit Information

Stack Height 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114(3)	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a double container receiver tank (DCRT) passive breather filter ventilation system used to support tank farm operations, such as but not limited to waste retrieval and operation support activities for 241 TX Tank Farm. The tanks stored radioactive waste during transfer operations. Any activity other than temporary storage and normal operation support will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Isolation and Closure of Exhaust Stacks 296-A-25, 296-B-28, 296-S-22 and 296-T-18	AIR 08-1107	11/10/2008	697

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.20E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.20E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

244-S DCRT (296-S-22 STACK)

Passive Ventilation Breather Filter System Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a

set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will allow vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

The isolation and removal of the HEPA filter bank located in the 244-S DCRT filter pit will require the deactivation of the HEPA filter bank instrumentation and alarms, the removal and disposal of the HEPA filter bank, and the installation of the filter pit duct jumper assembly, in accordance with ALARACT Demonstrations 6, 14, and 16. The 296-S-22 exhauster is equipped with a HEPA filter bank inside the filter pit. The HEPA filter bank is attached to three nozzles in the filter pit: one nozzle to the catch tank, one nozzle to the annulus, and one nozzle to the ventilation exhaust ductwork. The HEPA filter bank will be disconnected from the nozzles and removed for disposal. A filter pit duct jumper assembly (4" schedule 40 pipe) will be connected to the catch tank nozzle and ventilation exhaust ductwork nozzle to provide the ventilation path to the newly installed passive breather filters. The third nozzle to the annulus will be closed in the filter pit. The filter pit duct jumper assembly will be fabricated in accordance with ASME B31.3 and tested in accordance with ASME AG-1.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-S DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system in accordance with ALARACT 16. Disconnection is the physical disconnection and removal of wires from the power source. Pit entries are not required to disconnect power or isolate instrumentation.

296-S-22 Stack Isolation:

The 296-S-22 stack will be isolated via mechanical isolations. Blank flanges will be installed on the duct end and on the suction side of the exhaust fan. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

244-TX DCRT (296-T-18 STACK)

Passive Ventilation Breather Filter Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will collect potential airborne radioactive particulates from the annulus space while allowing vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter

housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

Removal of the HEPA filter bank in the 244-TX DCRT filter pit is not required. The HEPA filter bank will be isolated via closure of manual valves and the deactivation of motor-controlled valves. Above-grade duct/pipe will be capped. The associated HEPA filter bank instrumentation and alarms will be deactivated. This work will be done in accordance with ALARACT 16.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-TX DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system. Disconnection is the physical disconnection and removal of wires from the power source in accordance with ALARACT Demonstration 16. Pit entries are not required to disconnect power or isolate instrumentation.

296-T-18 Stack Isolation:

The 296-T-18 stack will be isolated via mechanical isolations. A blank flange will be installed at the suction side of the exhaust fan or at another suitable location near the filter pit outlet to the exhaust stack. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	4.12E-02	Am - 241	2.37E+01	Am - 243	7.23E-04
Ba - 137 m	5.43E+03	C - 14	8.19E-01	Cd - 113 m	2.83E+00
Cm - 242	2.40E-02	Cm - 243	1.39E-03	Cm - 244	2.56E-02
Co - 60	1.25E+00	Cs - 134	1.38E-02	Cs - 137	5.74E+03
Eu - 152	2.38E-01	Eu - 154	1.88E+01	Eu - 155	1.03E+01
H - 3	3.09E+00	I - 129	1.03E-02	Nb - 93 m	8.44E-01
Ni - 59	3.18E-01	Ni - 63	2.95E+01	Np - 237	1.95E-02
Pa - 231	8.58E-02	Pu - 238	4.50E+02	Pu - 239	3.16E+01
Pu - 240	1.92E+01	Pu - 241	6.28E+04	Pu - 242	1.74E-04
Ra - 226	7.54E-02	Ra - 228	1.78E-02	Ru - 106	1.62E-05
Sb - 125	1.40E+00	Se - 79	2.46E-02	Sm - 151	7.55E+02
Sn - 126	1.22E-01	Sr - 90	1.07E+04	Tc - 99	5.57E+00
Th - 229	8.09E-03	Th - 232	2.28E-03	U - 232	1.26E-02
U - 233	1.57E-01	U - 234	6.19E-02	U - 235	2.59E-03

U - 236	1.28E-03	U - 238	5.80E-02	Y - 90	1.07E+04
Zr - 93	1.02E+00				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.
5) The emissions shall be limited to 3.19E-02 mrem/yr unabated and 3.19E-04 mrem/yr abated.
6) Under passive ventilation no activities shall be conducted which could generate aerosols within the 244-TX DCRT.

Emission Unit ID: 749

200 W-296P048-001

296-P-48

This is a MAJOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 21.00 ft. 6.40 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 90 degrees Fahrenheit. 32 degrees Celsius.

Average Stack ExhaustVelocity: 38.22 ft/second. 11.65 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Demister	1	
	Heater	1	
	Prefilter	1	
	HEPA	2	2 HEPAs in series.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Each radionuclide that could contribute greater than 10 percent of the potential TEDE.	Continuous

Sampling Requirements Record sample collected biweekly

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a skid/mobile type portable exhauster used to support Tank Farm operations, such as, but not limited to waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and construction ansd operational support activities. The emission unit is a portable exhauster that operate intermittently.

This Emission Unit has 2 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-C-200 Series Tanks Retrieval	AIR 06-1052	10/5/2006	698

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.72E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 2.18E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The activities listed below are approved for the C-200 Series Waste Retrieval effort:

Retrieval Activities (Stack):

i. Operation of the new portable exhauster and ventilation system.
ii. Retrieve wastes from C-201, C-202, C-203, and C-204 using the AMS to vacuum

wastes to the central vessel skid.

iii. Pump waste from central vessel skid to the double shell tank system using OGT lines

Diffuse and Fugitive:

a. Proposed Actions for Tanks C-201 through C-204:

i. Remove the thermocouple trees from the top of the pump pit (no pit access is necessary) using ALARACTs 13, 14, and 15.

ii. Access pump pit to remove pump in C-204 (no removal of sluice eductors will be performed)(using ALARACTs 1, 4, 6, 13, 14 and 15) and gerneral access may be needed for the other pump pits and have been calculated in a pit access potential-to-emit.

iii. Remove the breather filters and reinstall with an inlet filter on each tank.

iv. Lift the ventilation hatchway cover (condenser pit hatchway) which is 1/4-inch steel thinkness and may be potentially attached to an old fiberglass filter assembly (using ALARACTs 1, 4, 6, 13, 14 and 15 as guidance for contamination level and controls) which will be withdrawn in a large sleeve (fully enclosed) from the pit, lifted, pig-tailed, and sealed. The filter will not be exposed to the environment while lifting. The filter will then be placed in a mixed waste disposal box and will not be left out in the environment. Smearable contamination levels on the outside of the bag will not exceed 50,000 dpm beta/gamma and 20 dpm alpha.

v. Remove condenser pit filter assembly and replace tank breather filter with a Y-duct assembly (ALARACTs 1, 4, 12, 15, and 16)

vi. Remove liquid level reels and thermocouple trees, 1 each per tank (ALARACTs 1, 4, 6, 12, 13, 14, and 15)

vii. Remove sluice eductor pump from Tank C-204, if necessary (ALARACTs 1, 4, 6, 12, 13, 14, and 15)

b. Tank Equipment Installations:

i. AMS with connected hydraulic power pack, one per tank (ALARACTs 1, 4, 6, 12, 13, and 14)

ii. Install ventilation inlet filter assembly to existing inlet filter on each tank. (using ALARACTs 13 and 16).

iii. Remove the ventilation hatchway (condenser pit) cover with the presumed attached fiberglass filter using a crane and lifting hook and placed immediately into a mixed waste disposal box. ALARACT 13 controls will be used for contamination guidance and controls (less than 50,000 dpm beta/gamma and 20 dpm alpha).

iv. The asbestos gasket for the ventilation hatchway (condenser pit) if present will be removed using fixative while a bag is in place over the ventilation hatchway (condenser pit). The plastic will be slowly removed to minimize hatchway access while concurrently a new ventilation hatchway cover (condenser pit) will be slid onto the pit access next to the plastic and rebolted to the pit. ALARACT 13 controls will be used for contamination guidance and controls (less than 50,000 dpm beta/gamma and 20 dpm alpha). The ventilation hatchway will have a connection so that the 296-P-48 exhauster will be connected when active retrieval occurs.

v. A single set of return and suction lines shall be placed at each tank to the central skid vacuum vessel during retrieval. After each tank is retrieved a small amount of water will be flushed through the line and checked for smearable contamination and dose readings by a Health Physics Technician to ensure minimal contamination is in place in the line. A valve will be closed at the tank surface manifold box, the end of each hose wrapped in plastic, and then moved to the next tank for retrieval. Contamination remaining in the lines when moved has been accounted for by inlcuding all of the current tank contents in the total retrieval potential-to-emit calculations.

vi. Ventilation exhaust ducting, one per tank (ALARACTs 1, 4, 12, and 16)

vi. Closed circuit TV s, one per tank (ALARACT 1, 4, 12, 13, and 16)

vii. Master camera control system skid, and connects to in-tank cameras (ALARACT 6, 13, and 16)

viii. Central vessel skid, connect to individual AMS units, connect to the double shell tank via OGT lines (using hand digging or Guzzler, latest approved revision) (ALARACT 1, 4, 5, 6, 13, and 14)

ix. Pump skid with connected hydraulic power pack, and OGT lines (ALARACT 1, 4, 6, 12, 13, and 14)

x. Vacuum skid with connected hydraulic power pack (ALARACT 1, 4, 6, 12, 13, and 14)

xi. Portable exhauster skid, connect via HVAC ducting to individual tank ventilation

exhaust ducts (ALARACTs 1, 4, 6, 12, 13, and 14)

xii. Electrical cable and electric supply to hydraulic power packs, vessel skid, pump skid, vacuum skid, portable exhauster skid, inlet filter, in-tank cameras, and generator, control instrumentation (ALARACT 5)

xiii. Air compressor and associated air supply lines to AMS, vessel skid, vacuum skid (ALARACT 5)

xiv. Instrumentation control room, water distribution sled, instrument electrical skid, diesel generator

c. Remove tank equipment installed under this NOC for maintenance, repair, disposal, or re-use for future tank retrievals. (ALARACTs 1, 4, 6, 12, 13, 14, 15 and 16)

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.36E-03	Am - 241	4.07E+01	Am - 243	9.41E-04
Ba - 137 m	3.96E+02	C - 14	1.07E-02	Cd - 113 m	3.83E-01
Cm - 242	6.10E-02	Cm - 243	2.92E-03	Cm - 244	1.29E-03
Co - 60	4.48E-03	Cs - 134	3.97E-06	Cs - 137	4.19E+02
Eu - 152	2.16E+00	Eu - 154	1.02E+00	Eu - 155	7.55E+01
H - 3	5.21E-03	I - 129	1.46E-04	Nb - 93 m	1.84E-01
Ni - 59	4.00E+00	Ni - 63	3.73E+02	Np - 237	2.28E-04
Pa - 231	4.61E-05	Pu - 238	2.60E+00	Pu - 239	1.16E+02
Pu - 240	1.91E+01	Pu - 241	1.42E+02	Pu - 242	9.77E-04
Ra - 226	3.47E-04	Ra - 228	9.45E-10	Ru - 106	7.24E-07
Sb - 125	7.50E-03	Se - 79	4.68E-03	Sm - 151	1.66E+02
Sn - 126	2.99E-02	Sr - 90	2.20E+03	Tc - 99	7.51E-02
Th - 229	3.53E-07	Th - 232	2.54E-12	U - 232	4.38E-08
U - 233	1.87E-09	U - 234	2.00E-03	U - 235	8.90E-05
U - 236	1.95E-05	U - 238	2.02E-03	Y - 90	2.20E+03
Zr - 93	2.06E-01				

4) A daily radiological survey of all the ductwork flange connections shall be performed to verify there is no leakage of radiological contamination from the exhauster ductwork.

5) At least once a shift a visual inspection of the ductwork, HEPA filter housing, fan, and flex connections shall be performed to verify the integrity of the ventilation system. Any deficiencies shall be reported to WDOH.

6) The batch holding vessel and associated piping shall be contained in a Conex-type container. That container shall be equipped with a single passive HEPA filter and leak detection devices. The leak detection shall be maintained and monitored in the two manifold boxes while in use [WAC 246-247-040(5)].

7) The differential pressure across the pre-filter, primary HEPA filter, secondary HEPA filter and total differential pressure across the pre-filter, primary HEPA filter and secondary HEPA filter shall be measured and recorded at least once each shift. The differential pressure readings shall be trended and any unexpected fluctuations in the differential pressure shall be reported to WDOH.

8) The new portable exhauster shall operate continuously when the AMS are operating in the tanks. Waste retrieval activities shall cease if the exhauster is not operating [WAC 246-247-040(5)].

9) The heater trip set point shall be set below 200 F. [WAC 246-247-040(5)].

10) The number of gallons of waste retrieved from each C-200 series tank shall be documented and reported to WDOH on completion [WAC 246-247-040(5)].

11) The total abated emission limit for 296-P-48 under this Notice of Construction is limited to 1.12E-03 to the Maximally Exposed Individual, comprised of 2.62E-04 mrem/year offsite and 8.53 E-04 mrem/year onsite. The total unabated emission limit on the potential-to-emit for 296-P-48 under this Notice of Construction is limited to 2.17 mrem/year to the Maximally Exposed Individual, comprised of 4.62E-01 offsite and 1.7E+00 mrem/year onsite to the Maximally Exposed Individual [WAC 246-247-040(5)].

12) Vacuum exhaust drawn from the batch holding vessel shall be routed back to tanks. The tanks shall be maintained under a negative pressure during tank retrieval activities [WAC 246-247-040(5)].

13) Each HEPA shall be in-place tested annually in accordance with the requirements of ASME AG-1 and shall have a minimum efficiency of 99.95%. [WAC 246-247-040(5)]

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The operation of the waste retrieval system(s) for the removal of radioactive wastes from all 149 Single Shell Tanks (SST) at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The saltcake dissolution waste retrieval system deployed in the SSTs is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped from the SST to a receiver tank, staging tank, storage DST or other staging/storage vessel associated with the supplemental treatment, packaging or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUCING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some SST waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving Double Shell Tank, recirculated supernatant/water, chemical agent or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities in the (SSTs). The vacuum waste retrieval system is introduced into the SSTs by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel or a staging SST, storage DST, or other staging/storage vessels associated with supplemental treatment, packaging or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the SSTs. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B and 241-T Tank Farms a vacuum retrieval process tank, staging tank, staging SST, storage DST or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the SST being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some SSTs. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360 degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

The robotic crawler is equipped with a plow blade at the front for pushing/pulling wastes, a screw pump to jet wastes through a small nozzle towards the center of the tank, the ability to direct hot or cold water through the same nozzle to wash wastes off of in-tank equipment, dissolve waste agglomerations in the tank, and wash waste toward the center of the tank for removal.

Any new retrieval methods or changes to processes will need to be provided to WDOH in a revised NOC prior to implementation.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste from single-shell tanks (SSTs) and move the waste to the double-shell tanks (DSTs). The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non1eaker tanks and 2) a vacuum retrieval option is intended for retrieval of assumed 1eaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	5.99E+00	Am - 241	8.68E+03	Am - 243	3.39E-01
Ba - 137 m	4.26E+07	C - 14	6.25E+02	Cd - 113 m	4.95E+03
Cm - 242	1.97E+01	Cm - 243	1.80E+00	Cm - 244	1.90E+01
Co - 60	2.52E+03	Cs - 134	3.44E+04	Cs - 137	4.89E+07
Eu - 152	8.49E+02	Eu - 154	1.45E+04	Eu - 155	9.54E+03
H - 3	5.95E+03	I - 129	2.95E+01	Nb - 93 m	1.01E+03
Ni - 59	1.05E+02	Ni - 63	9.30E+03	Np - 237	9.50E+01
Pa - 231	1.25E+01	Pu - 238	1.65E+02	Pu - 239	3.17E+03
Pu - 240	5.36E+02	Pu - 241	4.80E+03	Pu - 242	3.34E-02
Ra - 226	1.27E-02	Ra - 228	1.15E+01	Ru - 106	1.22E-02
Sb - 125	1.73E+04	Se - 79	6.36E+01	Sm - 151	8.93E+05
Sn - 126	2.59E+02	Sr - 90	2.91E+06	Tc - 99	2.24E+04
Th - 229	4.20E-01	Th - 232	1.26E+00	U - 232	3.66E+00
U - 233	3.02E+01	U - 234	1.07E+01	U - 235	4.44E-01
U - 236	2.73E-01	U - 238	9.86E+00	Y - 90	2.91E+06
Zr - 93	1.25E+03				

4) A pre-operational NDA of the exhauster(s) HEPA filters and a post-operational NDA will be performed the first time each of the four waste retrieval methods (mobile retrieval system, vacuum retrieval, supernatant sluicing, and saltcake dissolution with supernatant) when placed into service. The post-operational NDA should occur after one cycle or phase of waste retrieval operation is completed, a method replaces another method during a cycle/phase or six months from the inservice date, whichever occurs first. The facility may opt to replace the exhauster's HEPA filters prior to placing a new waste retrieval method in service and eliminate the pre-operational NDA.

5) While the exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading.

6) All ductwork shall be pressure tested in accordance with the requirements of ASME AG-1 Section SA.

7) All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (stagging) SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH.

8) All ventilation ductwork from the exit of the tank to the inlet of the exhauster filter housing shall be insulated.

9) During waste retrieval operations the maximum pressure for any waste retrieval method shall not exceed 37,000 psig.

10) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1 Section TA. HEPA filters shall have a minimum efficiency of 99.95%.

11) General WAC 246-247 technology standard exemptions justified and documented in RPP-19233, WAC 246-247 technology standard exemption justification for waste tank ventilation systems, may be applied to Phase II NOC retrieval exhauster operations.

12) Relative humidity shall be monitored, at least once a month, downstream of the heater and prior to the HEPA filters to ensure the air stream does not exceed 70% relative humidity.

13) The annual possession quantity shall be tracked on a WDOH approved log.

14) The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored, recorded and trended daily. Action levels shall be developed and provided to WDOH for when actions will be taken to assure the pre-filters and HEPA filters will be operated within their design parameters.

15) This emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements. The technical justification document required by ANSI/HPS N13.1-1999 shall be provided to WDOH for review and approval.

16) The exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank.

Emission Unit ID: 751

200E P-241AZ301-001

241-AZ-301

This is a MINOR, PASSIVELY ventilated emission unit.

241-AZ TANK FARM

Emission Unit Information

Stack Height 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a catch tank passive breather filter ventilation system used to support tank farm operations, such as but not limited to waste retrieval and operation support activities for 241-AZ Tank Farm. The tanks stored radioactive waste during transfer operations. Any activity other than temporary storage and normal operation support will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
E-525 Double-Shell Tank (DST) Transfer System Modifications Project	AIR 08-1104	11/10/2008	688

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.90E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.90E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Performing the following modifications to bring select portions of the DST system into conformance with regulatory, safety, and contractual requirements.

The modifications shall be accomplished by performing the following activities:

241-AZ-151 CATCH TANK BYPASS

A new RCRA-compliant condensate distribution system for condensate generated from the existing 241-AZ-702

ventilation system. This new system will consist of a 1200 gallon capacity catch tank (241-AZ-301), secondary containment, piping, pumps, and controls. The system is designed to collect condensate at a rate of 0.29 gallons per minute (154,424 gallons per year). The tank will be emptied every 2 to 3 days. At that time, condensate will be pumped back to one of the 241-AY or 241-AZ tanks at a rate of 4 to 5 gallons per minute.

The new 241-AZ-301 tank and system will be located outside the northeast corner of building 241-AZ-702. Most of the secondary containment structure will be located below grade (except for the cover that will be located above grade) to provide operator access. A HEPA filter will also be installed above grade. This filter will be connected to the 241-AZ-301 tank and will be used as the vent for the 241-AZ-301 tank.

The lower level of the fabricated tank system shall contain the receiver tank for the condensate coming from the AZ PC-SP-1 seal pot via line AZ-503. Other components housed in the lower level shall include the sump, sump suction line, tank suction piping, tank return piping, tank vent lines, instrument access risers, leak detection, and freeze protection, as required.

The upper level of the fabricated tank system will contain the distribution piping, pumps, valves, instrumentation, and controls. Operator access shall be provided as required (e.g., access ladder, hatch or door in system cover, mid-level grating to support operator). Distribution valves shall be located to provide the ability to use remote valve actuators if required. Freeze protection for the piping, pumps, and valves shall be used as required.

The AZ-PC-SP-1 seal pot is located in the 241-AZ-702 Building and this seal pot serves as a collection point for condensate originating from the 241-AZ-702 ventilation system. The 241-AZ-702 ventilation system provides primary tank ventilation for the 241-AY and 241-AZ DSTs. The existing 241-AZ-151 catch tank would be isolated in a separate effort to support other commitments.

Currently there are two drain paths into the 241-AZ-151 catch tank that will remain active after June 30, 2005. Those two drain paths are the condensate from the 241-AZ-702 Facility and the 241-AZ-801A floor drain. The 241-AZ-702 condensate drain line shall be rerouted to the 241-AY tanks and also to the 241-AZ tanks. In addition, the 241-AZ-801A floor drain shall be isolated.

241-AN AND 241-AW CLEAN OUT BOX TRANSFER LINE MODIFICATIONS

Sixteen Clean Out Boxes (COBs) have been identified on transfer lines. These COBs shall have access ports cut into the non-contaminated 12 inch vertical stand pipe, the primary pipes and encasements shall be cut and caps welded in place; and the upper portion of the structure cut off, isolated, and disposed in accordance with ALARACT 15, "Demonstration for Size Reduction of Waste Equipment for Disposal" and ALARACT 4, "Demonstration for Packaging and Transportation of Waste". This modification will entail approximately 100 one-inch pipe cuts, 20 two-inch pipe cuts, and 10 three-inch pipe cuts. The primary transfer lines and encasement pipes shall be capped on the branch section and welded to the COB structure.

The COBs must either be modified to be regulatory compliant or deactivated/isolated and removed.

The AN and AW Farms COB design consists of a 24-inch diameter steel cylinder formed from a 1/4 inch thick rolled steel plate and mounted on a 12-inch vertical stand pipe. The vertical stand pipe extends about four feet below grade to the slurry transfer line. A concrete anchor block supports the COB, encasement, and transfer pipe.

The sixteen COBs to be deactivated and/or isolated by the E-525 Project are:

AN Farm:
COB-AN-7, COB-AN-8, COB-AN-9

AW Farm:
COB-AW-1, COB-AW-2, COB-AW-3, COB-AW-4, COB-AW-5, COB-AW-6, COB-AW-7, COB-AW-8, COB-AW-9, COB-AW-10, COB-AW-11, COB-AW-12

242-A Evaporator

COB-A-30

SY TRANSFER LINE MODIFICATIONS

The following transfer lines, SL-177, SN-277, SN-285, SL-180, SN-280, and SN-286 shall be removed, cut into sections, and disposed of in accordance with ALARACT 15 "TWRS ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal", and ALARACT 4, "TWRS ALARACT Demonstration For Packaging and Transportation of Waste". Pit walls shall be core drilled as needed to accommodate the new pipe-in-pipe RCRA compliant configuration.

Pipe trenches shall be excavated to remove and install the new transfer lines. Excavation shall be accomplished with the guzzler and hand digging.

204-AR TRANSFER LINE MODIFICATION

Waste transfer line LIQW-702 shall be modified to extend the transfer line encasement through the pit wall. This pipe is buried approximately three and a half feet below grade, so the excavated area shall be approximately 10' x 10' x 6'. Demolition of a portion of the slab under an old laundry facility and a section of the asphalt surface adjacent to the doorstep of the facility will be required for access.

The new encasement section shall be open-ended, upstream of the exterior wall seal plate. The obsolete air purge connection to the existing encasement shall be removed.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.41E-07	Am - 241	1.82E-01	Am - 243	1.72E-06
Ba - 137 m	4.27E+01	C - 14	1.64E-04	Cd - 113 m	5.09E-03
Cm - 242	3.50E-03	Cm - 243	6.62E-06	Cm - 244	1.11E-04
Co - 60	2.52E-03	Cs - 134	1.30E-04	Cs - 137	4.53E+01
Eu - 152	2.36E-04	Eu - 154	1.02E-02	Eu - 155	1.20E-02
H - 3	1.07E-02	I - 129	3.05E-05	Nb - 93 m	9.15E-04
Ni - 59	5.45E-05	Ni - 63	5.30E-03	Np - 237	1.03E-03
Pa - 231	3.45E-07	Pu - 238	2.98E-04	Pu - 239	4.23E-03
Pu - 240	9.67E-04	Pu - 241	1.93E-02	Pu - 242	1.13E-07
Ra - 226	1.27E-08	Ra - 228	6.84E-06	Ru - 106	4.32E-09
Sb - 125	2.36E-03	Se - 79	1.23E-04	Sm - 151	9.39E-01
Sn - 126	1.70E-04	Sr - 90	1.43E+01	Tc - 99	3.49E-02
Th - 229	2.02E-07	Th - 232	9.02E-07	U - 232	2.18E-05
U - 233	8.95E-05	U - 234	8.06E-05	U - 235	3.11E-06
U - 236	5.81E-06	U - 238	5.92E-05	Y - 90	6.33E+00
Zr - 93	9.61E-04				

4) The breather filter shall be individually tested, annually, to the requirements of ASME AG-1 Section TA, and shall have a minimum efficiency of 99.95%.

Emission Unit ID: 755

200W DVS - Active

Mobile Drum Venting System (Active Vent)

This is a MINOR, ACTIVELY ventilated emission unit.

TRU Waste Retrieval

Emission Unit Information

Stack Height: ft. m. Stack Diameter 0.10 ft. 0.03 m.

Average Stack Effluent Temperature: 70 degrees Fahrenheit. 21 degrees Celsius.

Average Stack ExhaustVelocity: ft/second. m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA Type Filter	1	Shall be a NucFil ® Model IHF-004 or other with prior approval by the department.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		TOTAL ALPHA TOTAL BETA TOTAL GAMMA	End of each shift of operation

Sampling Requirements Smears of the exhuast vent at the end of each shift of operation.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for the TRU retrieval project Drum Venting Systems support decontamination and decommissioning operations at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the Transuranic Waste Retrieval Project	AIR 07-1012	10/19/2007	719

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.44E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) Excavation and Retrieval of Containers (drums or boxes)
Work will be performed in accordance with as low as reasonably achievable (ALARA).

The specific steps or approach to uncovering the containers will vary according to the configuration of the trench to be uncovered, the proximity of nearby trenches or fences, the designated location of the spoils pile, the planned extent of the soil removal, and other similar considerations.

Work to be performed within the V notched trenches is similar to the ongoing TRU retrieval project, but much of it may be performed within a weather resistant structure(s) that will be relocatable along the trench. Weather enclosures are effectively used for similar remediation activities at other U.S. Department of Energy (DOE) sites and in general industrial use. The use of a weather resistant enclosure could allow a more effective recovery from events involving degraded containers and potential contamination spreads.

The overburden soil will be removed to expose the waste containers. Excavation equipment will be chosen to effectively remove soil and retrieve the waste containers while minimizing damage to the containers. Excavation activities will be monitored to identify contamination that might be present and to minimize emissions.

The most efficient methodology for removing the uncontaminated overburden from the containers will include the maximum use of conventional methods such as backhoes, front end loaders, mechanical brooms (boom mounted), or manual digging with shovels and similar hand tools. Hand tools predominantly may be used to excavate contaminated soil. High efficiency particulate air (HEPA) filtered vacuums may be used for soil excavation, and spot contamination in accordance with the HEPA filtered vacuum unit (HVU) NOC (DOE/RL 97 50, as amended). Within the V Notched trenches, it is more likely that the use of a vacuum to remove larger quantities of soil from the top surface of buried containers and soil materials in the interstices surrounding containers will be employed. Any use of the sitewide Guzzler® will be performed under the NOC applicable to the unit.

Excavation activities will be controlled closely. When the quantity of soil removed with heavy equipment has reached the logical end, hand tools, light equipment, or HVUs may be used to complete the soil removal operations and to access and remove the plastic and plywood materials (to be set aside for reuse or disposal) covering the containers.

The exposed containers will be visually inspected and surveyed for contamination. Abnormal drum conditions will be managed as follows: Contaminated containers will be decontaminated or overpacked as needed. Bulging or potentially pressurized containers will be vented. Retrieval activities will include appropriate disposition of small amounts of incidental contaminated soil (e.g., containerized or fixed in place). Larger areas of contamination could be fixed and the area posted as required by the Radiological Control organization for later disposition. Bulk transfer of contaminated soils for disposal in another trench also could occur. All containers will be inspected to verify integrity. The container inspection will consist of a visual examination to determine if there are significant corrosion, holes, dents or other visual deformities. All containers could be moved, turned, or otherwise relocated (manually or with powered equipment, slings, clamps, or appropriate rigging) to facilitate an adequate visual inspection.

Overpacking containers with minor defects (pinholes, corrosion) is routinely performed at the LLBG and CWC. Precautions will be provided to safely retrieve containers of questionable integrity. It is expected that 10 to 100 percent of the newly retrieved containers will require overpacking or some other form of confinement. Breached and heavily corroded containers will usually be overpacked before being relocated. However, if a breached or heavily corroded container can provide adequate confinement, it may be relocated to an area for overpacking. The overpacked containers will be managed according to the LLW (including mixed waste) or TRU waste designation (TRU containers are those with TRU content greater than 100 nCi/g), established by records or assay.

After a container is inspected visually and the structural integrity established, the container, if unvented, will be staged for venting, or moved to another TSD unit for venting. Retrieved TRU waste containers in their staged configuration at the LLBG will be inspected for outwardly visible signs of corrosion or degradation (overpacking as needed).

Venting of Containers
All work will be performed in accordance with the applicable operating procedures, radiological control procedures, radiological work permit (RWPs) and ALARA requirements.

Experience at other DOE sites has shown a potential for flammable gases to be present in some containers. Therefore all containers will be evaluated and vented if needed even if not specifically designated as TRU containers.

The vent filters will continue to be installed in designated containers via one of the drum venting systems that ensures personnel and environmental protection. The methodology will require penetrating the container and inserting a vent. Penetration of the lid will be accomplished by either drilling through the lid or puncturing the lid with a filter dart (using Dart System). Container venting systems are described in the following text. Designated drums slated for venting will be vented with the MDVS, Catagorical DVS, or other venting methods (with prior approval of WDOH).

MDVS (Mobile Drum Venting System)
The MDVS is enclosed in a trailer containing system equipment allowing an operator to sample and/or vent

the drum and install a NucFil® filter or equivalent. Potential emissions from MDVS operations are point source emissions. Bulging or potentially pressurized drums may be overpacked, placed in restraints and then vented.

The MDVS trailer may be equipped with a HEPA vacuum system to prevent contamination from exiting through any incidental gaps and to clean room air in the event of airborne contamination. These emissions will be accounted for with the sitewide HEPA Vacuum NOC. The system could be automatically activated when the continuous air monitor (CAM) alarms or it could be manually activated. The CAM and/or air sample results will be used to verify the PTE is within the limits of the sitewide HEPA vacuum NOC.

Dart System
The Dart System is a portable unit that clamps directly onto a drum, using a pneumatic driver remotely activated by wire or radio transmitter. This system penetrates the drum lid with minimal risk of contamination release to install a NucFil® filter with an aluminum bronze housing to prevent the possibility of sparking. Potential emissions from these operations will be considered diffuse and fugitive.

Catagorical DVS2 (Drum Venting System 2)
The DVS2 vent system, utilizing a pneumatic drill, is remotely actuated to vent the drum. After the drum is vented, a filter is hand-installed; the headspace of the drum is sampled and analyzed in the DVS2 via a sample port on the filter. The analysis process involves withdrawing a sample directly from the container head space through flexible tubing to a gas chromatograph (GC) for analysis. During analysis, the sample is heated up to 212°F (100°C) within the GC and subsequently allowed to cool to 70°F (21°C) or below before it is emitted to the atmosphere. Up to 150 of these samples are planned to be done per week per GC. No more than 9,000 drums per year will be analyzed by the combined HSGS units. Upon completion of analysis, the drum is staged in a designated area for diffusion. Glove bags may be used to contain potential contamination. A portable HEPA vacuum with a variable speed is connected to the HEPA filter on the glovebag and will be used for exhausting the glovebag. The vacuum will be operated during venting and for a short time following venting at a low flow. The vacuum may or may not be operated during the headspace analyses activities. Glovebags will also have ports to check for contamination or hazardous gases. As many as three venting assemblies will be installed in a weather enclosure such as a Conex box. Connections for the third assembly may be used with the TRU Retrieval Drum Restraint in the event of a bulged or high DE-Ci drum.

The DVS2 unit will be installed within an enclosure such as a Conex box or trailer, and within the CWC complex, with side doors that will open to accommodate loading and unloading the drums.

The HSGS analysis unit in the DVS2 will exhaust through the HEPA vacuum, although the vacuum may or may not be operating when the analysis is performed. A small percentage (0.5%) of the sample stream will be released as diffuse and fugitive.

Other Venting Methods
The venting of other containers, the majority being fiberglass reinforced plywood (FRP) boxes but could also be metal containers - hereafter referred to collectively as boxes, located in CWC and the LLBG may be done. Two venting systems for the boxes will be used. Both systems will be capable of mating to various sized boxes and will be capable of installing a Nucfil® filter or equivalent into the box headspace.

One type of vent system uses a steel plate held in place against the side of a box by a forklift as a blast shield for personnel protection in the event the container is pressurized. A rubber gasket will provide a seal between the steel plate and the box. A glove bag will then be attached to the steel plate and the box to provide for contamination control during the drilling of the box. The glove bag contains a HEPA-type filter for passive control of contaminated particulates that may escape from the box during the drilling operation. In the event contamination is encountered during filter installation, a HEPA vacuum would be connected for use only after the filter is installed. The HEPA vacuum would be subject to the sitewide HEPA vacuum NOC.

After the steel plate and glove bag are in place personnel will drill a pilot hole in the box, monitor for the presence of contamination and hazardous gases, and install a Nucfil® filter or equivalent. A time weighted release of 60 minutes per box is allowed for drilling and filter installation. These activities will be conducted

through glove ports that are an integral part of the glove bag. The drilling will be done with non-sparking and cold drilling techniques. A static dissipating cleaner manufactured by STATICO ™ or equivalent will be used to decay electrostatic build up in the fiberglass during drilling.

A second type of vent system for FRP boxes may be used that is similar to the portable DVS operating at T Plant. There could be several of these units in use within the LLBG. A glove bag with HEPA-type filter is used but without the steel plate and the drilling will be done remotely. The drill assembly and motor and bit type will remain the same. The system uses a pneumatic cold drilling technique that utilizes remote activation. The FRP venting system is placed on the top or side of the box and held in place with straps or clamps throughout the drilling and filter installation operation. A static dissipating cleaner manufactured by STATICO™ or an equivalent will be used to decay electrostatic build up in the fiberglass during drilling. A time weighted release of 60 minutes per box is allowed for drilling and filter installation. After holes are drilled, Nucfil® filters or equivalent will be hand installed in the box using glove ports in the glovebag.

In the event contamination is encountered during the installation of a Nucfil® a HEPA vacuum would be connected for use only after the Nucfil® is installed. The HEPA vacuum would be subject to the sitewide HEPA vacuum NOC.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 9.01E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.28E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Alpha release rate based on Am-241. See condition 4.			
B/G - 0	1.92E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Beta/Gamma release rate based on Cs-137. See condition 4.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 243	Cf - 252	Cm - 244	Cs - 134
Cs - 137	Eu - 152	Eu - 154	Pu - 238	Pu - 239/240
Pu - 241	Sr - 90	U - 234	U - 235	U - 236
U - 238				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) A maximum of 9,000 containers of waste are approved to be processed per year using the DVS or the Catagorical DVS2. The processing rate is designed to be 60 minutes per container. Only one drum shall be processed at a time per DVS unit (If a second DVS is acquired, it shall be licensed by the department prior to use). Using the release fraction of 1.0E-3 for particulates and a time factor of 1.03 (60 minutes per container multiplied by 9, 000 containers and divided by 526,000 minutes per year) the potential unabated release rates using the DVS is 1.28 E-3 Ci/yr americium 241 and 1.92 E-2 Ci/yr cesium 137. This alternative release fraction is approved for this emission unit. An average of 53 DE-Ci is assumed with a maximum of 1.27 E-03 DE-Ci/yr unabated released from the staging and handling of vented containers.

5) It is recognized that other radionuclides may be present in very limited quantities.

6) The department shall be notified within 24 hours of all drum vents that fail to be installed properly and smears show >2,000 dpm/100 cm^2 alpha or >100,000 dpm/100 cm^2 beta/gamma removable contamination (an example of a "failure" is a pressure release that blows past the seat of the boot or a deflagration).

7) The system shall be built to meet NQA-1 requirements and shall be aerosol tested annually using ANSI N-510 as guidance for non-ANSI N-509 systems. If in-field aerosol testing is not feasible, an approved alternative is given to replace the filters on an annual basis with the manufacturer tested and certification of HEPA filter with a tested

rating of 99.97% efficiency. Records of this testing shall be maintained on file.

8) This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

TRU Waste Retrieval

Encountering contamination is expected during excavation; therefore, to determine a potential to emit if contamination is encountered, the administrative control points for contamination, as monitored by standard radiological field instrumentation, will be used to bound emissions based on current efficiencies of typical SWSD field contamination instruments. To determine the corresponding soil concentration in picocuries per grams of individual radionuclides, conversion factors, as developed in Soil Contamination Standards for Protection of Personnel (HNF 2418) were used. The average soil density was assumed to be 98 pounds per cubic foot. The beta gamma contributing radionuclides were assumed to be represented by cesium 137 and the alpha contributing radionuclides were assumed to be represented by americium 241 (predominant alpha contributing radionuclide in the soil is unknown; therefore, assumption of americium 241 will produce the most conservative dose consequence). The respective volumes of contaminated soil (i.e., 300 m^3, 3 m^3, and 0.3 m^3) at the three contamination levels are considered as released from manual excavation, using a release fraction of 1.0 E-3.

The potential unabated dose rate from manual excavation is 2.79 E-03 mrem/year. No credit is taken for abatement; therefore, the abated emissions are assumed as the unabated emissions. Although fixatives and similar controls would be employed for the higher contamination level and notification level contamination, no credit is being taken for abatement; therefore, the abated dose rate is the unabated dose rate.

9) This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Venting of Containers

All work shall be performed in accordance with the applicable radiological control procedures and ALARA requirements. These requirements are carried out through the procedures, activity work packages, and associated RWPs.

The vent filters will be installed in designated containers by using the Drum Venting System (DVS) and/or Dart System that ensures personnel and environmental protection. The methodology will require penetrating the container and inserting a vent. Penetration of the lid will be accomplished by either drilling through the lid with a filter assembly fitted with a short hollow drill bit (using DVS) or puncturing the lid with a filter dart (using Dart system). Either method will result in emissions being routed through a filter during the venting process.

Most drums slated for venting will be vented with the DVS, consisting of a trailer with a chamber allowing an operator to sample the drum and install a NucFil ® filter. Potential emissions from these operations are point source emissions.

Bulging or potentially pressurized drums will be evaluated to determine best method and location to vent (Dart-in place, Dart-relocate, or move to the DVS). The Dart System is a portable unit that straps directly onto a drum, using a pneumatic driver remotely activated by wire or radio transmitter. This system penetrates the drum lid to install a NucFil ® filter with an aluminum bronze housing to prevent the possibility of sparking. Potential emissions from these operations will be considered diffuse and fugitive. The same Dart System will be used to install sample ports, consisting of a closure set screw covering a septum for withdrawing a sample for HSGS, in containers with existing vents at the LLBG, CWC, WRAP, or T Plant Complex, without creating a new pathway for potential emissions.

Emission Unit ID: 756

200W DVS - Passive

Mobile Drum Venting System (Passive Vent)

This is a MINOR, PASSIVELY ventilated emission unit.

TRU Waste Retrieval

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA Type Filter	1	Shall be a Pall ® Model Ultramet or other with prior approval by the department.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		TOTAL ALPHA TOTAL BETA TOTAL GAMMA	End of each shift of operation.

Sampling Requirements Smears of the exhuast vent at the end of each shift of operation.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for the TRU retrieval project Drum Venting Systems support decontamination and decommissioning operations at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the Transuranic Waste Retrieval Project	AIR 07-1012	10/19/2007	719

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.44E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) Excavation and Retrieval of Containers (drums or boxes)
Work will be performed in accordance with as low as reasonably achievable (ALARA).

The specific steps or approach to uncovering the containers will vary according to the configuration of the trench to be uncovered, the proximity of nearby trenches or fences, the designated location of the spoils pile, the planned extent of the soil removal, and other similar considerations.

Work to be performed within the V notched trenches is similar to the ongoing TRU retrieval project, but much of it may be performed within a weather resistant structure(s) that will be relocatable along the trench. Weather enclosures are effectively used for similar remediation activities at other U.S. Department of Energy (DOE) sites and in general industrial use. The use of a weather resistant enclosure could allow a more effective recovery from events involving degraded containers and potential contamination spreads.

The overburden soil will be removed to expose the waste containers. Excavation equipment will be chosen to effectively remove soil and retrieve the waste containers while minimizing damage to the containers. Excavation activities will be monitored to identify contamination that might be present and to minimize emissions.

The most efficient methodology for removing the uncontaminated overburden from the containers will include the maximum use of conventional methods such as backhoes, front end loaders, mechanical brooms (boom mounted), or manual digging with shovels and similar hand tools. Hand tools predominantly may be used to

excavate contaminated soil. High efficiency particulate air (HEPA) filtered vacuums may be used for soil excavation, and spot contamination in accordance with the HEPA filtered vacuum unit (HVU) NOC (DOE/RL 97 50, as amended). Within the V Notched trenches, it is more likely that the use of a vacuum to remove larger quantities of soil from the top surface of buried containers and soil materials in the interstices surrounding containers will be employed. Any use of the sitewide Guzzler® will be performed under the NOC applicable to the unit.

Excavation activities will be controlled closely. When the quantity of soil removed with heavy equipment has reached the logical end, hand tools, light equipment, or HVUs may be used to complete the soil removal operations and to access and remove the plastic and plywood materials (to be set aside for reuse or disposal) covering the containers.

The exposed containers will be visually inspected and surveyed for contamination. Abnormal drum conditions will be managed as follows: Contaminated containers will be decontaminated or overpacked as needed. Bulging or potentially pressurized containers will be vented. Retrieval activities will include appropriate disposition of small amounts of incidental contaminated soil (e.g., containerized or fixed in place). Larger areas of contamination could be fixed and the area posted as required by the Radiological Control organization for later disposition. Bulk transfer of contaminated soils for disposal in another trench also could occur. All containers will be inspected to verify integrity. The container inspection will consist of a visual examination to determine if there are significant corrosion, holes, dents or other visual deformities. All containers could be moved, turned, or otherwise relocated (manually or with powered equipment, slings, clamps, or appropriate rigging) to facilitate an adequate visual inspection.

Overpacking containers with minor defects (pinholes, corrosion) is routinely performed at the LLBG and CWC. Precautions will be provided to safely retrieve containers of questionable integrity. It is expected that 10 to 100 percent of the newly retrieved containers will require overpacking or some other form of confinement. Breached and heavily corroded containers will usually be overpacked before being relocated. However, if a breached or heavily corroded container can provide adequate confinement, it may be relocated to an area for overpacking. The overpacked containers will be managed according to the LLW (including mixed waste) or TRU waste designation (TRU containers are those with TRU content greater than 100 nCi/g), established by records or assay.

After a container is inspected visually and the structural integrity established, the container, if unvented, will be staged for venting, or moved to another TSD unit for venting. Retrieved TRU waste containers in their staged configuration at the LLBG will be inspected for outwardly visible signs of corrosion or degradation (overpacking as needed).

Venting of Containers
All work will be performed in accordance with the applicable operating procedures, radiological control procedures, radiological work permit (RWPs) and ALARA requirements.

Experience at other DOE sites has shown a potential for flammable gases to be present in some containers. Therefore all containers will be evaluated and vented if needed even if not specifically designated as TRU containers.

The vent filters will continue to be installed in designated containers via one of the drum venting systems that ensures personnel and environmental protection. The methodology will require penetrating the container and inserting a vent. Penetration of the lid will be accomplished by either drilling through the lid or puncturing the lid with a filter dart (using Dart System). Container venting systems are described in the following text. Designated drums slated for venting will be vented with the MDVS, Catagorical DVS, or other venting methods (with prior approval of WDOH).

MDVS (Mobile Drum Venting System)
The MDVS is enclosed in a trailer containing system equipment allowing an operator to sample and/or vent the drum and install a NucFil® filter or equivalent. Potential emissions from MDVS operations are point source emissions. Bulging or potentially pressurized drums may be overpacked, placed in restraints and then vented.

The MDVS trailer may be equipped with a HEPA vacuum system to prevent contamination from exiting through any incidental gaps and to clean room air in the event of airborne contamination. These emissions will be accounted for with the sitewide HEPA Vacuum NOC. The system could be automatically activated when the continuous air monitor (CAM) alarms or it could be manually activated. The CAM and/or air sample results will be used to verify the PTE is within the limits of the sitewide HEPA vacuum NOC.

Dart System
The Dart System is a portable unit that clamps directly onto a drum, using a pneumatic driver remotely activated by wire or radio transmitter. This system penetrates the drum lid with minimal risk of contamination release to install a NucFil® filter with an aluminum bronze housing to prevent the possibility of sparking. Potential emissions from these operations will be considered diffuse and fugitive.

Catagorical DVS2 (Drum Venting System 2)
The DVS2 vent system, utilizing a pneumatic drill, is remotely actuated to vent the drum. After the drum is vented, a filter is hand-installed; the headspace of the drum is sampled and analyzed in the DVS2 via a sample port on the filter. The analysis process involves withdrawing a sample directly from the container head space through flexible tubing to a gas chromatograph (GC) for analysis. During analysis, the sample is heated up to 212°F (100°C) within the GC and subsequently allowed to cool to 70°F (21°C) or below before it is emitted to the atmosphere. Up to 150 of these samples are planned to be done per week per GC. No more than 9,000 drums per year will be analyzed by the combined HSGS units. Upon completion of analysis, the drum is staged in a designated area for diffusion. Glove bags may be used to contain potential contamination. A portable HEPA vacuum with a variable speed is connected to the HEPA filter on the glovebag and will be used for exhausting the glovebag. The vacuum will be operated during venting and for a short time following venting at a low flow. The vacuum may or may not be operated during the headspace analyses activities. Glovebags will also have ports to check for contamination or hazardous gases. As many as three venting assemblies will be installed in a weather enclosure such as a Conex box. Connections for the third assembly may be used with the TRU Retrieval Drum Restraint in the event of a bulged or high DE-Ci drum.

The DVS2 unit will be installed within an enclosure such as a Conex box or trailer, and within the CWC complex, with side doors that will open to accommodate loading and unloading the drums.

The HSGS analysis unit in the DVS2 will exhaust through the HEPA vacuum, although the vacuum may or may not be operating when the analysis is performed. A small percentage (0.5%) of the sample stream will be released as diffuse and fugitive.

Other Venting Methods
The venting of other containers, the majority being fiberglass reinforced plywood (FRP) boxes but could also be metal containers - hereafter referred to collectively as boxes, located in CWC and the LLBG may be done. Two venting systems for the boxes will be used. Both systems will be capable of mating to various sized boxes and will be capable of installing a Nucfil® filter or equivalent into the box headspace.

One type of vent system uses a steel plate held in place against the side of a box by a forklift as a blast shield for personnel protection in the event the container is pressurized. A rubber gasket will provide a seal between the steel plate and the box. A glove bag will then be attached to the steel plate and the box to provide for contamination control during the drilling of the box. The glove bag contains a HEPA-type filter for passive control of contaminated particulates that may escape from the box during the drilling operation. In the event contamination is encountered during filter installation, a HEPA vacuum would be connected for use only after the filter is installed. The HEPA vacuum would be subject to the sitewide HEPA vacuum NOC.

After the steel plate and glove bag are in place personnel will drill a pilot hole in the box, monitor for the presence of contamination and hazardous gases, and install a Nucfil® filter or equivalent. A time weighted release of 60 minutes per box is allowed for drilling and filter installation. These activities will be conducted through glove ports that are an integral part of the glove bag. The drilling will be done with non-sparking and cold drilling techniques. A static dissipating cleaner manufactured by STATICO ™ or equivalent will be used

to decay electrostatic build up in the fiberglass during drilling.

A second type of vent system for FRP boxes may be used that is similar to the portable DVS operating at T Plant. There could be several of these units in use within the LLBG. A glove bag with HEPA-type filter is used but without the steel plate and the drilling will be done remotely. The drill assembly and motor and bit type will remain the same. The system uses a pneumatic cold drilling technique that utilizes remote activation. The FRP venting system is placed on the top or side of the box and held in place with straps or clamps throughout the drilling and filter installation operation. A static dissipating cleaner manufactured by STATICO™ or an equivalent will be used to decay electrostatic build up in the fiberglass during drilling. A time weighted release of 60 minutes per box is allowed for drilling and filter installation. After holes are drilled, Nucfil® filters or equivalent will be hand installed in the box using glove ports in the glovebag.

In the event contamination is encountered during the installation of a Nucfil® a HEPA vacuum would be connected for use only after the Nucfil® is installed. The HEPA vacuum would be subject to the sitewide HEPA vacuum NOC.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 9.01E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	4.32E-07	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Alpha release rate based on Am-241. See condition 6.			
B/G - 0	2.16E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Beta/Gamma release rate based on Cs-137. See condition 6..			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 243	Cf - 252	Cm - 244	Cs - 134
Cs - 137	Eu - 152	Eu - 154	Pu - 238	Pu - 239/240
Pu - 241	Sr - 90	U - 234	U - 235	U - 236
U - 238				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notifiy the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) It is recognized that other radionuclides may be present in very limited quantities.

5) The department shall be notified within 24 hours of all drum vents that fail to be installed properly and smears show >2,000 dpm/100 cm^2 alpha or >100,000 dpm/100 cm^2 beta/gamma removable contamination (an example of a "failure" is a pressure release that blows past the seat of the boot or a deflagration).

6) The passive vent of the MDVS exhausts potential emissions from the use of the HEPA Vacuum mounted in the test chamber to collect metal filings after installation of a NucFil filter. Release rates are calculated by multiplying surface area vacuumed by the contamination level. An estimate of the release rate is calculated by assuming the surface area of the boot that covers the drum lid during the filter installation process (8.3 square inches) multiplied by 9,000 drums with an average contamination level of 10,000 dpm/100 cm^2 beta/gamma and 200 dpm/100 cm^2 alpha. Using a release fraction of 1.0 for the HEPA vacuum use, the potential release rates from using the DVS is 4.3E-7 Ci/yr americium-241 and 2.2E-05 Ci/yr cesium-137. These alternative release fractions are approved for this emission unit.

7) The system shall be built to meet NQA-1 requirements and shall be aerosol tested annually using ANSI N-510 as guidance for non-ANSI N-509 systems. If in-field aerosol testing is not feasible, an approved alternative is given to replace the filters on an annual basis with the manufacturer tested and certification of HEPA filter with a tested rating of 99.97% efficiency. Records of this testing shall be maintained on file.

8) The test compartment is passively ventilated with a HEPA-type filter and is designed to withstand a deflagration as

described in the performance specification for this venting system. If deflagration occurs, all activities associated with this license shall cease and the department shall be notified.

9) The top of the drum shall be surveyed while inside the DVS, after installation of the NucFil filter. If removable contamination is found, the drum lid shall be decontaminated before removal from the DVS. The drum shall be surveyed prior to leaving or immediately after removal from the DVS. Once removed from the DVS, the drum must be immediately decontaminated or contained such that the drum is free of removable contamination (i.e., less than 20 dpm/ 100 cm^2 alpha and less than 1000 dpm/100 cm^2 beta/gamma). Decontamination at the LLBG is attempted in a graded approach (dry rags, wet rags, decontamination solutions, fixatives, or over packing if other methods prove unsuccessful).

10) This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

TRU Waste Retrieval

Encountering contamination is expected during excavation; therefore, to determine a potential to emit if contamination is encountered, the administrative control points for contamination, as monitored by standard radiological field instrumentation, will be used to bound emissions based on current efficiencies of typical SWSD field contamination instruments. To determine the corresponding soil concentration in picocuries per grams of individual radionuclides, conversion factors, as developed in Soil Contamination Standards for Protection of Personnel (HNF 2418) were used. The average soil density was assumed to be 98 pounds per cubic foot. The beta gamma contributing radionuclides were assumed to be represented by cesium 137 and the alpha contributing radionuclides were assumed to be represented by americium 241 (predominant alpha contributing radionuclide in the soil is unknown; therefore, assumption of americium 241 will produce the most conservative dose consequence). The respective volumes of contaminated soil (i.e., 300 m^3, 3 m^3, and 0.3 m^3) at the three contamination levels are considered as released from manual excavation, using a release fraction of 1.0 E-3.

The potential unabated dose rate from manual excavation is 2.79 E-03 mrem/year. No credit is taken for abatement; therefore, the abated emissions are assumed as the unabated emissions. Although fixatives and similar controls would be employed for the higher contamination level and notification level contamination, no credit is being taken for abatement; therefore, the abated dose rate is the unabated dose rate.

11) This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Venting of Containers

All work shall be performed in accordance with the applicable radiological control procedures and ALARA requirements. These requirements are carried out through the procedures, activity work packages, and associated RWPs.

The vent filters will be installed in designated containers by using the Drum Venting System (DVS) and/or Dart System that ensures personnel and environmental protection. The methodology will require penetrating the container and inserting a vent. Penetration of the lid will be accomplished by either drilling through the lid with a filter assembly fitted with a short hollow drill bit (using DVS) or puncturing the lid with a filter dart (using Dart system). Either method will result in emissions being routed through a filter during the venting process.

Most drums slated for venting will be vented with the DVS, consisting of a trailer with a chamber allowing an operator to sample the drum and install a NucFil ® filter. Potential emissions from these operations are point source emissions.

Bulging or potentially pressurized drums will be evaluated to determine best method and location to vent (Dart-in place, Dart-relocate, or move to the DVS). The Dart System is a portable unit that straps directly onto a drum, using a pneumatic driver remotely activated by wire or radio transmitter. This system penetrates the drum lid to install a NucFil ® filter with an aluminum bronze housing to prevent the possibility of sparking. Potential emissions

from these operations will be considered diffuse and fugitive. The same Dart System will be used to install sample ports, consisting of a closure set screw covering a septum for withdrawing a sample for HSGS, in containers with existing vents at the LLBG, CWC, WRAP, or T Plant Complex, without creating a new pathway for potential emissions.

Emission Unit ID: 855

200E P-296A046-001

296-A-46

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AW TANK FARM

Emission Unit Information

Stack Height: 28.13 ft. 8.57 m. Stack Diameter 0.84 ft. 0.26 m.

Average Stack Effluent Temperature: degrees Fahrenheit. degrees Celsius.

Average Stack ExhaustVelocity: 91.31 ft/second. 27.83 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	
	HEPA	2	In series.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Cs-137, Am-241, C-14, Y90, Cs-134, Eu-154, Ac-227, Pa-231, U-233, Pu-238, Pu-240, Pu-241, Cm-244.	Continuous

Sampling Requirements Record sample collected biweekly

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241-AW Tank Farm during storage, maintenance, and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-A-47. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of New Ventilation Systems in AN and AW Tank Farms	AIR 06-1060	10/5/2006	706

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.60E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.33E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 296-A-44 and 296-A-45 shall ventilate the 241-AN Double Shell Tank (DST) Farm which consists of

seven individual DSTs. The 296-A-46 and 296-A-47 shall ventilate the 241-AW Double Shell Tank (DST) Farm which consists of six individual DSTs. The DSTs are fabricated as two concentric tanks surrounded by a concrete shell. The inner tank containing the waste is 75 feet in diameter and 46.8 feet high at the crown. Each tank stores 1.14E6 gallons. The DSTs are used for storage, treatment, retrieval, and disposal of the waste contained in the tanks, as well as transfers to the Waste Treatment Plant.

The 296-A-44, 296-A-45, 296-A-46 and 296-A-47 ventilation systems serve to remove heat, and serve as containment systems for radioactive particulates present in the tank headspace, they ventilate/remove flammable gases and vapors that evolve from the liquid surface in the DSTs. The ventilation systems do this by drawing air into the tank vapor space. After the air leaves the vapor space the air is conditioned by the ventilation system. It removes entrained moisture, the relative humidity is reduced, and particulates are filtered out. Before discharge of this air to the atmosphere from the stack, the air is monitored and sampled for radionculide particulates.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.29E+02	Am - 241	9.67E+04	Am - 243	1.34E+01
Ba - 137 m	1.61E+07	C - 14	4.38E+02	Cd - 113 m	7.25E+03
Cm - 242	6.99E+01	Cm - 243	7.92E+00	Cm - 244	2.25E+02
Co - 60	4.13E+03	Cs - 134	1.80E+04	Cs - 137	1.70E+07
Eu - 152	1.01E+03	Eu - 154	4.26E+04	Eu - 155	4.42E+04
H - 3	2.47E+03	I - 129	8.13E+00	Nb - 93 m	1.77E+03
Ni - 59	7.44E+02	Ni - 63	7.02E+04	Np - 237	5.81E+01
Pa - 231	2.70E+02	Pu - 238	2.95E+03	Pu - 239	2.71E+04
Pu - 240	4.86E+03	Pu - 241	6.00E+04	Pu - 242	3.77E-01
Ra - 226	2.38E+02	Ra - 228	3.65E+01	Ru - 106	1.02E+03
Sb - 125	2.04E+04	Se - 79	5.38E+01	Sm - 151	1.48E+06
Sn - 126	2.21E+02	Sr - 90	2.08E+07	Tc - 99	6.09E+03
Th - 229	2.49E+01	Th - 232	6.08E+00	U - 232	2.73E+01
U - 233	4.46E+02	U - 234	6.14E+01	U - 235	2.34E+00
U - 236	2.73E+00	U - 238	5.06E+01	Y - 90	2.08E+07
Zr - 93	1.80E+03				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.
5) Prior to operation of the ventilation system a leak test of the entire train including the ductwork from the exit of the tank to the entrance to the stack shall be performed meeting the requirements called out in ASME AG-1.
6) The Annual Possession Quantity shall be tracked on a WDOH approved log.
7) The ductwork between the de-entrainer and heater, along with the filter housings shall be insulated.
8) The effluent monitoring and sampling system shall meet the requirements of ANSI N13.1-1999. A written technical basis document required by Section 4 of ANSI N13.1-1999 shall be provided to WDOH for review and approval.
9) The exhauster shall be operational during all waste transfer, waste disturbing, or particulate generating activities.

Emission Unit ID: 856

200E P-296A047-001

296-A-47

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AW TANK FARM

Emission Unit Information

Stack Height: 28.13 ft. 8.57 m. Stack Diameter 0.84 ft. 0.26 m.

Average Stack Effluent Temperature: degrees Fahrenheit. degrees Celsius.

Average Stack ExhaustVelocity: 91.31 ft/second. 27.83 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Decntrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	
	HEPA	2	In series.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Cs-137, Am-241, C-14, Y90, Cs-134, Eu-154, Ac-227, Pa-231, U-233, Pu-238, Pu-240, Pu-241, Cm-244.	Continuous

Sampling Requirements Record sample collected biweekly

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241-AW Tank Farm during storage, maintenance, and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-A-46. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of New Ventilation Systems in AN and AW Tank Farms	AIR 06-1060	10/5/2006	706

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.60E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.33E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 296-A-44 and 296-A-45 shall ventilate the 241-AN Double Shell Tank (DST) Farm which consists of

seven individual DSTs. The 296-A-46 and 296-A-47 shall ventilate the 241-AW Double Shell Tank (DST) Farm which consists of six individual DSTs. The DSTs are fabricated as two concentric tanks surrounded by a concrete shell. The inner tank containing the waste is 75 feet in diameter and 46.8 feet high at the crown. Each tank stores 1.14E6 gallons. The DSTs are used for storage, treatment, retrieval, and disposal of the waste contained in the tanks, as well as transfers to the Waste Treatment Plant.

The 296-A-44, 296-A-45, 296-A-46 and 296-A-47 ventilation systems serve to remove heat, and serve as containment systems for radioactive particulates present in the tank headspace, they ventilate/remove flammable gases and vapors that evolve from the liquid surface in the DSTs. The ventilation systems do this by drawing air into the tank vapor space. After the air leaves the vapor space the air is conditioned by the ventilation system. It removes entrained moisture, the relative humidity is reduced, and particulates are filtered out. Before discharge of this air to the atmosphere from the stack, the air is monitored and sampled for radionculide particulates.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.29E+02	Am - 241	9.67E+04	Am - 243	1.34E+01
Ba - 137 m	1.61E+07	C - 14	4.38E+02	Cd - 113 m	7.25E+03
Cm - 242	6.99E+01	Cm - 243	7.92E+00	Cm - 244	2.25E+02
Co - 60	4.13E+03	Cs - 134	1.80E+04	Cs - 137	1.70E+07
Eu - 152	1.01E+03	Eu - 154	4.26E+04	Eu - 155	4.42E+04
H - 3	2.47E+03	I - 129	8.13E+00	Nb - 93 m	1.77E+03
Ni - 59	7.44E+02	Ni - 63	7.02E+04	Np - 237	5.81E+01
Pa - 231	2.70E+02	Pu - 238	2.95E+03	Pu - 239	2.71E+04
Pu - 240	4.86E+03	Pu - 241	6.00E+04	Pu - 242	3.77E-01
Ra - 226	2.38E+02	Ra - 228	3.65E+01	Ru - 106	1.02E+03
Sb - 125	2.04E+04	Se - 79	5.38E+01	Sm - 151	1.48E+06
Sn - 126	2.21E+02	Sr - 90	2.08E+07	Tc - 99	6.09E+03
Th - 229	2.49E+01	Th - 232	6.08E+00	U - 232	2.73E+01
U - 233	4.46E+02	U - 234	6.14E+01	U - 235	2.34E+00
U - 236	2.73E+00	U - 238	5.06E+01	Y - 90	2.08E+07
Zr - 93	1.80E+03				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.
5) Prior to operation of the ventilation system a leak test of the entire train including the ductwork from the exit of the tank to the entrance to the stack shall be performed meeting the requirements called out in ASME AG-1.
6) The Annual Possession Quantity shall be tracked on a WDOH approved log.
7) The ductwork between the de-entrainer and heater, along with the filter housings shall be insulated.
8) The effluent monitoring and sampling system shall meet the requirements of ANSI N13.1-1999. A written technical basis document required by Section 4 of ANSI N13.1-1999 shall be provided to WDOH for review and approval.
9) The emission unit shall meet the quality assurance requirements of 40 CFR 61 Subpart H, as effective on October 9, 2002.
10) The exhauster shall be operational during all waste transfer, waste disturbing, or particulate generating activities.

Emission Unit ID: 874

200W Concrete Containers

Concrete Containers

This is a MINOR, PASSIVELY ventilated emission unit.

PLUTONIUM FINISHING PLANT(Z PLANT)

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	WAC 246-247-040(3) & (5)	TOTAL ALPHA TOTAL BETA	Annually at a minimum

Sampling Requirements Radiological surveys to include smears of vents and seal area

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the 200 W Concrete Containers, PFP, hold radioactive materials to support the surveillance and maintenance mission at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Transition of the Plutonium Finishing Plant	AIR 06-1020	10/5/2006	655

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.40E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The proposed activities involve transitioning the PFP Complex to a state of low-risk, low-cost, long-term surveillance and maintenance pending final disposition. All work would be performed in accordance with the approved radiological control procedures and as low as reasonably achievable (ALARA) program requirements as implemented by the project radiological control manual, as amended. These requirements would be carried out through the activity work packages and associated radiological work permits.

This activity includes deactivation of buildings and also includes deactivation of systems no longer necessary once stabilization and storage activities and planned legacy hold-up removal have been concluded; removal/disposition of equipment/components; contamination characterization and reduction/mitigation; packaging plutonium holdup material meeting waste acceptance criteria; maintaining and operating muffle furnaces, as needed, for removed plutonium holdup material; and demolition of radiologically contaminated, non-process ancillary buildings.

This activity also includes deactivation activities or activities to prepare and place a facility in a safe and stable condition to minimize the long-term cost of a surveillance and maintenance program while being protective of personnel, the public, and the environment until demolition of former processing and material storage buildings occurs. Deactivation activities would include those actions foreseeably necessary for implementation of the proposed action, such as associated transportation activities, waste removal and disposal, and award of grants and contracts. Specific actions could include the following work involving the potential for radioactive contamination:

- Draining and/or de-energizing systems as appropriate.
- Stabilizing contaminated areas (e.g., with fixatives, sealants, paint).
- Stabilizing or removing gloveboxes, process equipment, tanks, piping, fume hoods, and support equipment.
- Removing fencing and paved parking areas adjacent to facilities.
- Installing alternate environmental monitoring, surveillance, and safety components (e.g., lighting, fencing) if required.
- Removing/packaging radioactive (including equipment calibration sources and laboratory standards) and hazardous materials and waste, including stabilization and/or removal of asbestos, and removal, cleanup, and disposition of polychlorinated biphenyls and other regulated materials and transportation to existing waste management facilities.
- Removing equipment and system components.
- Size-reducing process equipment for disposal as waste.
- Performing physical or chemical treatment processes (e.g., neutralization, solidification, filtering) to render a material less hazardous or to reduce the volume (such processes will not increase the potential release rates)..
- Decontamination to support the excess of surplus equipment.
- Removing excess combustible material.
- Disconnecting utilities, piping, and communication service systems (if the systems are not necessary to maintain required environmental monitoring or building safety systems), including associated excavation.
- Ensuring adequate freeze and heat protection.
- Stabilizing, reducing, combining, or removing waste materials at outdoor locations within the PFP Complex (such processes will not increase the potential release rates provided in this NOC).
- Sealing cracks, gratings, and openings to the building exterior, and repairing roofs.
- Conducting general housekeeping activities (e.g., vacuuming, sweeping, dusting) in areas where radiological contamination is not anticipated (e.g., radiological buffer area) but could be encountered.
- Removing or reducing radioactive or hazardous contamination from facilities and equipment by washing, heating, chemical or electrochemical action, mechanical cleaning, or other similar techniques.
- Removing residual plutonium holdup material, which might remain throughout the PFP Complex after stabilization activities described in the PFP EIS have been completed; packaging residual plutonium holdup meeting waste acceptance criteria for shipment to an onsite waste management facility, or thermally stabilizing material in muffle furnace operations and packaging for storage in existing PFP Complex vaults.
- Designing and executing changes to utility service systems and/or utility structures necessary to place a facility in surveillance and maintenance, pending demolition.
- Conducting final process operations to stabilize or eliminate residual operational materials or effluents, such as final process runs; cleaning of vessels, valve pits and pipe trenches; installation and operation of small evaporators; flushing piping systems; removal or replacement of filters; and other similar closeout actions.
- Demolishing non-process ancillary buildings.
- Deactivation activities will require actions to provide for continued routine maintenance, repair, and replacement-in-kind of operating portions of PFP.

Other actions include:

- Remove residual plutonium from gloveboxes, filterboxes, equipment, piping, ductwork, and the building surfaces and package for disposition to onsite or offsite disposal facilities.
- Remove internal equipment from gloveboxes and building equipment/system components and package for disposition to onsite or offsite disposal facilities.
- Decontaminate gloveboxes, filterboxes, ductwork, and equipment to less than transuranic levels if possible.
- Remove gloveboxes, filterboxes, ductwork, and equipment and package for disposition to onsite or offsite disposal facilities.
- Decontaminate or fix contamination on building interior and exterior.
- Disconnect utilities and services not necessary for monitoring.
- Perform radiological and chemical characterization in preparation for dismantlement.

In preparation for the proposed transition activities, housekeeping, assays, preventive maintenance, minor decontamination, and reactivation of glovebox access ports would occur.

See additional process description in the following Conditions/Limitations.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 8.90E+02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	3.20E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Based on Am-241. Isotopes of plutonium and americium may be present based on process knowledge of PFP operations.			
Beta - 0	3.20E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Based on Sr-90.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241 Co - 60 Cs - 137 Sr - 90

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notifiy the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   Concrete containers shall be installed as an array of fourteen containers. Existing fuel packages shall be transferred to an area immediately adjacent to the concrete container prepared to receive the fuel. After loading the fuel (via crane), each concrete container shall be closed and managed as a point source. The concrete containers shall be either closed with a seal or vented passively through a NucFil or equivalent filter.

   Fuel assemblies/pins repackaging and storage activities shall be conducted outdoors. All work shall be performed in accordance with approved radiological control methods and as low as reasonably achievable (ALARA) program requirements. These requirements shall be carried out through activity work packages and associated radiological work permits.

   Presently, at the PFP Complex, there are closed interim storage casks (ISCs) that each contain a core component container (CCC). A CCC contains fuel received from the Fast Flux Test Facility (located in the 400 Area of the Hanford Site). Five (5) of the CCCs have residual surface contamination associated with them due to handling at FFTF.

   The lids of each ISC shall be removed and the CCCs transferred via crane to a new concrete container. After loading the CCC (via crane), each concrete container would be closed and managed as a point source. The emptied ISCs shall be closed and returned to FFTF.

5) The total abated emission limit for the Concrete Containers emission unit is limited to 5.5E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the potential-to-emit for this emission unit is limited to 5.5E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

Emission Unit ID: 878

200W P-BULKVIT-001

Bulk Vit Demo Exhauster

This is a MAJOR, ACTIVELY ventilated emission unit.

Supplemental Treatment Test Demonstration Facility

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Quench		One in operation
	Mist Eliminator		One in operation
	Heater		One in operation
	HEPAs		Two banks of HEPAs in series.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B, Method 114	Cs-137, C-14, Sr-90, Tc-99	Continuous

Sampling Requirements Record Sample collected biweekly, and a continuous air monitor for beta, and gamma.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a building/facility exhauster that is use to ventilate building and facility operations such as but not limited to process vessels, contaminated rooms, cells, glove boxes, hoods, abandoned facilities awaiting decommissioning, and vaults that support tank farm operations, maintenance and surveillance activities for tank farms. The exhauster can be used to support current surveillance, maintenance activities, operations or decommissioning, decontamination, and cleanup activities within the building/facility. Many of the activities other normal surveillance, maintenance, and operation support will be or are regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a building/facility exhauster ventilation system that operates intermittently. This exhauster is not operational at this time.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Supplemental Treatment Test and Demonstration Facility	AIR 06-1059	10/5/2006	705

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.50E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 7.35E+01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Liquid salt-solution received at the Demonstration Bulk Vitrification System (DBVS) from the 241-S-109 Single Shell Tank will be mixed with appropriate glass formers and excess water will be removed from the mixture. The mixture will be transported and distributed into a refractory-lined waste container, where electrodes, penetrating the waste mixture, will vitrify the waste via resistive heating. Preparation of the DBVS site could require excavation of up to 5,445 cubic feet of radioactively contaminated soil.

After completion of the vitrification process, soil and sand will be added to sufficiently fill the void container volume. The waste and waste container will undergo cooling, sampling, and external decontamination. The waste container with final vitrified waste will be allowed to cool, and will be stored at the Test and Demonstration Facility awaiting transfer to an approved storage facility or transferred to an approved onsite low-level burial ground.

The DBVS RD&D program will be operated in two phases. The Phase 1 DBVS will consist of treatment of up to three container loads, each incorporating up to 1135 L (300 gallons) of tank waste. Simulants (i.e., materials similar in chemical composition to tank waste) will be added to the waste load along with the glass formers to create a container load (including insulation materials) up to 54.4 m3 (1920 ft3). The containers will be stored at the Test and Demonstration Facility and ultimately be transferred to the IDF or another permitted disposal facility.

The goal of Phase 2 is to optimize the DBVS performance and operation for full-scale use. Phase 2 will consist of treatment of up to 50 (including containers from Phase I) container loads of waste totaling up to 1,355,500 L (300,000 gallons) of tank waste. Tank waste, process additives, and process control parameters will be varied to establish optimum operating process parameters or envelopes. It is anticipated that one container load of material will be vitrified weekly over one operating year.

The DBVS will receive Low Activity Waste (LAW) from Tank 241-S-109 into tanks for process feed, storage, and sampling. The tank capacities for the DBVS waste receipt are 18,000 gallons, and will be used in the production of up to 50 containers. The waste receipt tanks will be vented through the Off Gas Treatment System (OGTS). The 1,000 gallon staging tank used for receipt of waste for up to 3 batches will be passively ventilated through a HEPA filter.

Process Additives

The DBVS will receive soil, glass additives, container refractory sand, and other material necessary to the vitrification process. Soil will be used to form the matrix for the vitrification process. Vitrification aids such as graphite, boron, and zirconium can be used to initiate melting and increase glass performance (waste retention).

Waste Feed Preparation

Prior to starting the vitrification process, the waste feed material will be mixed with soil and additives and dried to approximately two percent moisture content. The mixer/dryer will be heated by steam from an onsite boiler. The dry material transfer system will be equipped with weigh stations to control the amount of material being added to the mixer/dryer. The design capacity of the mixer/dryer is 2,640 gallons (10,000 L) and the nominal cycle time is between six and eight hours. During the mixing/drying cycle the unit will be operated under a vacuum.

Vitrification Container Preparation

The waste containers will be a steel box approximately 10 feet high by 8 feet wide and 24 feet long. Prior to waste being added to the container the box will be lined with insulating board, sand, and a layer of castable refractory which will face the waste material. A layer of melt-initiating graphite and soil will be placed over the castable refractory in the bottom of the container. A steel lid with attached electrodes will be sealed to the box, using bolted flanges and a refractory gasket, prior to waste being added. The lid contains several ports for waste material addition, electrode connections, venting, sampling, and introduction of post-vitrification materials. All connections to the lid will be mechanically sealed. In addition the waste transfer connections will be equipped with shutoff valves to prevent spillage of material as the chute is attached to and removed from the port. Each connection port will be equipped with secondary containment and spilled material recovery provisions during material transfer, melting and cool down. The container-filling operation is performed under negative pressure and exhausted out the vent port to the OGTS.

In-Container Vitrification

The waste mixture from the mixer/dryer will be placed into the vitrification container through ports in the sealed box lid. Electrical power will be applied to the electrodes, vitrifying the container contents via resistive heating. Ambient air, filtered through a HEPA filter, is injected to cool the vitrification offgases and provide thermal protection for the sintered metal filters. Both "bottom-up" and "top-down" melting can be conducted during testing. Top-down melting is conducted by applying power to the electrodes only after all waste materials and process additives have been placed in the container. Bottom-up melting begins melting with a shallow layer of material in the container and continues as more material is added until the desired depth of melt is obtained.

Post-Vitrification Container Handling

After vitrification has been completed the container connection to the OGTS will be maintained, and clean fill materials will be added to fill cavities around the electrodes and cover the top of the vitrified waste to minimize headspace in the container. Sampling of the vitrified waste, radiation surveying, and external decontamination can be conducted after initial cooling has been completed. Sampling of the melt will be conducted as required by a coring process through a port in the side of the container. Temporary storage of up to 50 treated waste containers will be located at the Test and Demonstration Facility.

Offgas Treatment System

The offgas treatment for the DBVS operations will include the following:
Particulate and gaseous emissions from waste receipt;
Particulate emissions from process additive receipt, storage, and transfer;
Particulate and gaseous emissions from mixer/dryer;
Particulate and gaseous emissions from waste container filling and vitrification;
Particulate emissions from waste container topoff after vitrification.

Mixer/Dryer Offgass emissions will be partially treated for moisture removal using a glycol-cooled condenser and mist eliminator prior to being routed to the OGTS downstream of the venturi scrubber.

The Offgas Treatment System shall consist of two sintered metal filters in series, a quencher, venturi scrubber, and mist eliminator system. Dilute sodium hydroxide will be injected in both the quencher and venturi scrubber to reduce hydrogen chloride and other acid gas emissions. Scrubber offgases will pass through an additional condenser and mist eliminator, with drainage from those units routed to the scrubber recycle tanks. An offgas heater, two banks of HEPA filters (in series), and a carbon filter will follow the mist eliminator. A polishing filter will be installed downstream of the carbon filter. Based on results from Phase I a larger selective catalytic reduction unit can be added or an additional SCR unit added in series. An optional packed tower scrubber may be used.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.40E-03	Am - 241	4.82E+00	Am - 243	1.37E-04
Ba - 137 m	2.23E+04	C - 14	3.76E+01	Cd - 113 m	8.88E+01
Cm - 242	9.18E-03	Cm - 243	7.16E-04	Cm - 244	7.16E-03
Co - 60	2.10E+01	Cs - 134	2.09E-01	Cs - 137	2.36E+04
Eu - 152	3.96E+00	Eu - 154	9.65E+01	Eu - 155	7.95E+01
H - 3	1.09E+02	I - 129	3.47E-01	Nb - 93 m	1.80E+01
Ni - 59	4.20E+00	Ni - 63	3.89E+02	Np - 237	6.69E-01
Pa - 231	6.25E-03	Pu - 238	1.48E-01	Pu - 239	7.26E+00
Pu - 240	1.11E+00	Pu - 241	6.91E+00	Pu - 242	4.90E-05
Ra - 226	2.25E-04	Ra - 228	6.78E-02	Ru - 106	7.24E-05
Sb - 125	3.98E+01	Se - 79	5.02E-01	Sm - 151	1.68E+04
Sn - 126	3.04E+00	Sr - 90	8.70E+03	Tc - 99	1.80E+02
Th - 229	1.77E-03	Th - 232	6.60E-03	U - 232	1.03E-02

U - 233	4.21E-02	U - 234	3.73E-02	U - 235	1.56E-03
U - 236	9.91E-04	U - 238	3.54E-02	Y - 90	8.70E+03
Zr - 93	2.46E+01				

4) During waste and soil additions and during the melting process the Ancillary Waste Transfer Enclosure (AWTE) shall be inplace. Any time the AWTE is removed the container shall be surveyed and wiped down to remove any contamination on the outside of the waste container.

5) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.

6) In order to confirm the use of alternative release fractions and the proposed potential-to-emit, a Non-Destructive Analysis (NDA) of the HEPA filters using gamma spectroscopy shall be performed prior to the introduction of radioactive material. Another NDA shall be performed after 25 containers have been processed, or if the HEPA filters are changed out prior to 25 containers. Based on the data obtained from the NDA a potential-to-emit shall be calculated to verify operations are within the bounds of activities described in this approval. Results shall be provided to WDOH within 60 days of the final NDA.

7) Prior to operation of the ventilation systems a leak test of the entire train, from the waste receipt tanks to the exhaust fan shall be performed, meeting the requirements called out in ASME AG-1.

8) The effluent monitoring and sampling system shall meet the requirement of ANSI 13.1-1999. A written technical basis document are required by Section 4 of ANSI 13.1-1999 shall be provided to WDOH for review and approval prior to installation of the sampling system.

9) The HEPA filters in the current trailer shall be replaced by a new HEPA filter housing compliant with the requirements of ASME AG-1 Section HA and use filters compliant with Section FC.

Emission Unit ID: 885

200 W-296P049-001

296-P-49

This is a MAJOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 28.00 ft. 8.53 m. Stack Diameter 0.83 ft. 0.25 m.

Average Stack Effluent Temperature: 90 degrees Fahrenheit. 32 degrees Celsius.

Average Stack ExhaustVelocity: 91.72 ft/second. 27.96 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	
	HEPA	2	In series.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Each radionuclide that could contribute greater than 10 percent of the potential TEDE.	Continuous

Sampling Requirements Record sample collected biweekly

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a skid/mobile type portable exhauster used to support tank farm operations, such as but not limited to, waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and operation support activities. The emission unit is a portable exhauster that operates intermittently or continuously. The exhauster is not operational at this time.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Categorical Tank Farm Facility Waste Retrieval and Closure: Phase II Waste Retrieval Operations	AIR 09-704	7/28/2009	703

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The operation of the waste retrieval system(s) for the removal of radioactive wastes from all 149 Single Shell Tanks (SST) at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The saltcake dissolution waste retrieval system deployed in the SSTs is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped from the SST to a receiver tank, staging tank, storage DST or other staging/storage vessel associated with the supplemental treatment, packaging or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUCING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some SST waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving Double Shell Tank, recirculated supernatant/water, chemical agent or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities in the (SSTs). The vacuum waste retrieval system is introduced into the SSTs by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel or a staging SST, storage DST, or other staging/storage vessels associated with supplemental treatment, packaging or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the SSTs. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B and 241-T Tank Farms a vacuum retrieval process tank, staging tank, staging SST, storage DST or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the SST being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some SSTs. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360 degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with

the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

The robotic crawler is equipped with a plow blade at the front for pushing/pulling wastes, a screw pump to jet wastes through a small nozzle towards the center of the tank, the ability to direct hot or cold water through the same nozzle to wash wastes off of in-tank equipment, dissolve waste agglomerations in the tank, and wash waste toward the center of the tank for removal.

Any new retrieval methods or changes to processes will need to be provided to WDOH in a revised NOC prior to implementation.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste from single-shell tanks (SSTs) and move the waste to the double-shell tanks (DSTs). The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non1eaker tanks and 2) a vacuum retrieval option is intended for retrieval of assumed 1eaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	5.99E+00

		Am - 241	8.68E+03	Am - 243	3.39E-01
Ba - 137 m	4.26E+07	C - 14	6.25E+02	Cd - 113 m	4.95E+03
Cm - 242	1.97E+01	Cm - 243	1.80E+00	Cm - 244	1.90E+01
Co - 60	2.52E+03	Cs - 134	3.44E+04	Cs - 137	4.89E+07
Eu - 152	8.49E+02	Eu - 154	1.45E+04	Eu - 155	9.54E+03
H - 3	5.95E+03	I - 129	2.95E+01	Nb - 93 m	1.01E+03
Ni - 59	1.05E+02	Ni - 63	9.30E+03	Np - 237	9.50E+01
Pa - 231	1.25E+01	Pu - 238	1.65E+02	Pu - 239	3.17E+03
Pu - 240	5.36E+02	Pu - 241	4.80E+03	Pu - 242	3.34E-02
Ra - 226	1.27E-02	Ra - 228	1.15E+01	Ru - 106	1.22E-02
Sb - 125	1.73E+04	Se - 79	6.36E+01	Sm - 151	8.93E+05
Sn - 126	2.59E+02	Sr - 90	2.91E+06	Tc - 99	2.24E+04
Th - 229	4.20E-01	Th - 232	1.26E+00	U - 232	3.66E+00
U - 233	3.02E+01	U - 234	1.07E+01	U - 235	4.44E-01
U - 236	2.73E-01	U - 238	9.86E+00	Y - 90	2.91E+06
Zr - 93	1.25E+03				

4) A code compliance matrix demonstrating compliance to AG-1 shall be provided to WDOH prior to installation of the exhausters.

5) A pre-operational NDA of the exhauster(s) HEPA filters and a post-operational NDA will be performed the first time each of the four waste retrieval methods (mobile retrieval system, vacuum retrieval, supernatant sluicing, and saltcake dissolution with supernatant) when placed into service. The post-operational NDA should occur after one cycle or phase of waste retrieval operation is completed, a method replaces another method during a cycle/phase or six months from the inservice date, whichever occurs first. The facility may opt to replace the exhauster's HEPA filters prior to placing a new waste retrieval method in service and eliminate the pre-operational NDA.

6) While the exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading.

7) All ductwork shall be pressure tested in accordance with the requirements of ASME AG-1 Section SA.

8) All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (stagging) SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH.

9) All ventilation ductwork from the exit of the tank to the inlet of the exhauster filter housing shall be insulated.

10) During waste retrieval operations the maximum pressure for any waste retrieval method shall not exceed 37,000 psig.

11) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1 Section TA. HEPA filters shall have a minimum efficiency of 99.95%.

12) General WAC 246-247 technology standard exemptions justified and documented in RPP-19233, WAC 246-247 technology standard exemption justification for waste tank ventilation systems, may be applied to Phase II NOC retrieval exhauster operations.

13) Relative humidity shall be monitored, at least once a month, downstream of the heater and prior to the HEPA filters to ensure the air stream does not exceed 70% relative humidity.

14) The annual possession quantity shall be tracked on a WDOH approved log.

15) The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored, recorded and trended daily. Action levels shall be developed and provided to WDOH for when actions will be taken to assure the pre-filters and HEPA filters will be operated within their design parameters.

16) The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements.

17) The exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank.

Emission Unit ID: 886

200 W-296P050-001

296-P-50

This is a MAJOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 28.00 ft. 8.53 m. Stack Diameter 0.83 ft. 0.25 m.

Average Stack Effluent Temperature: 90 degrees Fahrenheit. 32 degrees Celsius.

Average Stack ExhaustVelocity: 91.72 ft/second. 27.96 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deenttrainer	1	Operational at all times, when exhauster is in use.
	Heater	1	Operational at all times, when exhauster is in use.
	Prefilter	1	
	HEPA	2	In series.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Each radionuclide that could contribute greater than 10 percent of the potential TEDE.	Continuous

Sampling Requirements Record sample collected biweekly

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a skid/mobile type portable exhauster used to support tank farm operations, such as but not limited to, waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and operation support activities. The emission unit is a portable exhauster that operates intermittently or continuously. The exhauster is not operational at this time.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Categorical Tank Farm Facility Waste Retrieval and Closure: Phase II Waste Retrieval Operations	AIR 09-704	7/28/2009	703

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The operation of the waste retrieval system(s) for the removal of radioactive wastes from all 149 Single Shell Tanks (SST) at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The saltcake dissolution waste retrieval system deployed in the SSTs is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped from the SST to a receiver tank, staging tank, storage DST or other staging/storage vessel associated with the supplemental treatment, packaging or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUCING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some SST waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving Double Shell Tank, recirculated supernatant/water, chemical agent or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities in the (SSTs). The vacuum waste retrieval system is introduced into the SSTs by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel or a staging SST, storage DST, or other staging/storage vessels associated with supplemental treatment, packaging or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the SSTs. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B and 241-T Tank Farms a vacuum retrieval process tank, staging tank, staging SST, storage DST or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the SST being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some SSTs. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360 degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with

the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

The robotic crawler is equipped with a plow blade at the front for pushing/pulling wastes, a screw pump to jet wastes through a small nozzle towards the center of the tank, the ability to direct hot or cold water through the same nozzle to wash wastes off of in-tank equipment, dissolve waste agglomerations in the tank, and wash waste toward the center of the tank for removal.

Any new retrieval methods or changes to processes will need to be provided to WDOH in a revised NOC prior to implementation.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste from single-shell tanks (SSTs) and move the waste to the double-shell tanks (DSTs). The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non leaker tanks and 2) a vacuum retrieval option is intended for retrieval of assumed leaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	5.99E+00

		Am - 241	8.68E+03	Am - 242	3.39E-01
Ba - 137 m	4.26E+07	C - 14	6.25E+02	Cd - 113 m	4.95E+03
Cm - 242	1.97E+01	Cm - 243	1.80E+00	Cm - 244	1.90E+01
Co - 60	2.52E+03	Cs - 134	3.44E+04	Cs - 137	4.89E+07
Eu - 152	8.49E+02	Eu - 154	1.45E+04	Eu - 155	9.54E+03
H - 3	5.95E+03	I - 129	2.95E+01	Nb - 93 m	1.01E+03
Ni - 59	1.05E+02	Ni - 63	9.30E+03	Np - 237	9.50E+01
Pa - 231	1.25E+01	Pu - 238	1.65E+02	Pu - 239	3.17E+03
Pu - 240	5.36E+02	Pu - 241	4.80E+03	Pu - 242	3.34E-02
Ra - 226	1.27E-02	Ra - 228	1.15E+01	Ru - 106	1.22E-02
Sb - 125	1.73E+04	Se - 79	6.36E+01	Sm - 151	8.93E+05
Sn - 126	2.59E+02	Sr - 90	2.91E+06	Tc - 99	2.24E+04
Th - 229	4.20E-01	Th - 232	1.26E+00	U - 232	3.66E+00
U - 233	3.02E+01	U - 234	1.07E+01	U - 235	4.44E-01
U - 236	2.73E-01	U - 238	9.86E+00	Y - 90	2.91E+06
Zr - 93	1.25E+03				

4) A code compliance matrix demonstrating compliance to AG-1 shall be provided to WDOH prior to installation of the exhausters.

5) A pre-operational NDA of the exhauster(s) HEPA filters and a post-operational NDA will be performed the first time each of the four waste retrieval methods (mobile retrieval system, vacuum retrieval, supernatant sluicing, and saltcake dissolution with supernatant) when placed into service. The post-operational NDA should occur after one cycle or phase of waste retrieval operation is completed, a method replaces another method during a cycle/phase or six months from the inservice date, whichever occurs first. The facility may opt to replace the exhauster's HEPA filters prior to placing a new waste retrieval method in service and eliminate the pre-operational NDA.

6) While the exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading.

7) All ductwork shall be pressure tested in accordance with the requirements of ASME AG-1 Section SA.

8) All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (stagging) SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH.

9) All ventilation ductwork from the exit of the tank to the inlet of the exhauster filter housing shall be insulated.

10) During waste retrieval operations the maximum pressure for any waste retrieval method shall not exceed 37,000 psig.

11) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1 Section TA. HEPA filters shall have a minimum efficiency of 99.95%.

12) General WAC 246-247 technology standard exemptions justified and documented in RPP-19233, WAC 246-247 technology standard exemption justification for waste tank ventilation systems, may be applied to Phase II NOC retrieval exhauster operations.

13) Relative humidity shall be monitored, at least once a month, downstream of the heater and prior to the HEPA filters to ensure the air stream does not exceed 70% relative humidity.

14) The annual possession quantity shall be tracked on a WDOH approved log.

15) The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored, recorded and trended daily. Action levels shall be developed and provided to WDOH for when actions will be taken to assure the pre-filters and HEPA filters will be operated within their design parameters.

16) The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements. The technical justification document required by ANSI/HPS N13.1-1999 shall be provided to WDOH for review and approval.

17) The exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank.

Emission Unit ID: 888

Hanford Sitewide

Tanker Loading of Contaminated Waste Water

This is a MINOR, PASSIVELY ventilated emission unit.

Tanker Truck Loading Catagorical

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114	Total alpha, total beta	As listed in the following Conditions and Limitations.

Sampling Requirements As listed in the following Conditions and Limitations.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status The tanker trucks are designed to receive and temporarily hold low level contaminated liquids for transport to LERF, ETF, and/or DST.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Tanker Truck Loading of Radioactively Contaminated Waste Water	AIR 09-705	7/28/2009	696

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 6.00E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted. The approved activities are limited to transfer of radioactive waste water (e.g., purgewater, pool cell water, decontamination solutions) from various locations on the Hanford site by mobile tanker trucks. The tanker trucks will be used to transport this wastewater to the Liquid Effluent Retention Facility (LERF), the 200 Areas Effluent Treatment Facility (ETF), and/or to a Double-Shell Tank (DST) located in one of the 200 Area tank farms. The proposed action includes isolated instances where small quantities of wastewater might be transferred to 55 gallon drums or smaller containers, and transported to LERF, the ETF, and/or to a DST. The license is a categorical license under WAC 246-247-060(8). In the text of the license conditions, it should be understood that the term "tanker" or "tanker/drum" or variants of these terms includes smaller containers, so that the license shall apply to loading of tankers, drums, or smaller containers.

The physical and chemical processes associated with tanker truck loading activities are:
- Isotopic analysis of wastewater.
- Tanker truck or truck deployment.
- Hookup of transfer equipment for transfer of wastewater into tanker, drums, or smaller containers.
- Wastewater transfer to the tanker truck, drums, or smaller containers via pumping or vacuum transfer.
- Associated surveys, spill prevention, other radcon activities.
- Decontamination of tanker/drums/smaller containers.
- Decontamination or packaging of transfer equipment for transport.
- Decontamination or packaging of spillage and resulting contamination.

Unloading of the tanker trucks, drums, or smaller containers is not licensed under this approval.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 6.00E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	3.60E-07	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Any radionuclide on the chart of the nuclides could be encountered during tanker loading operations. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all beta/gamma is assumed to be Cs-137 and all alpha is assumed to be Am-241 for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

Beta - 0	1.10E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Any radionuclide on the chart of the nuclides could be encountered during tanker loading operations. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all beta/gamma is assumed to be Cs-137 and all alpha is assumed to be Am-241 for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) At all times, activities shall conform to procedures for prior characterization and handling of radioactive liquid approved in accord with applicable QA program. Prior to commencing liquid transfer into tanker/drum/smaller container:
a) Waste liquid shall be characterized, and acceptability at the LERF, ETF, and DST shall be verified.
b) All transfer line hookups shall be inspected to verify leak-tight connections.
c) Spill prevention measures shall be verified to be in place.
d) Volume of tanker/drum/smaller container contents shall be verified and documented.
e) Seals separating tanker/drum/smaller container contents from environment shall be verified fully functional.

During the loading operation:
f) Surveys shall be performed according to radiation control procedures approved via applicable QA program.
g) Fill rates shall be controlled below 50 cfm.

On completion of the loading operation:
h) All tanker/drum fittings shall be disconnected and closed.
i) All liquid/gas release points on the tanker/drum shall be closed and shall remain closed until commencement of unloading operations at the LERF, ETF, and/or DST.
j) Spill prevention measures shall remain in place until the tanker/drum is closed.
k) The tanker/drum shall be surveyed and if necessary decontaminated before release for transport.
l) Transfer equipment shall be surveyed and if necessary decontaminated or packaged for transport subject to radcon procedures approved in accord with applicable QA program.
m) Spillage shall be surveyed and if necessary decontaminated or packaged for transport and disposal subject to radcon procedures approved in accord with applicable QA program.
n) Volume of tanker/drum contents shall be verified and documented.

The surface contamination release criteria for the vehicle, tanker, drums, and transport equipment shall be documented and approved in accord with an applicable QA program.

(WAC 246-247-040(5))

5) Log, Monitoring, and Demonstration of Compliance to Licensed Emission Limit:

a) A single log shall be maintained, reflect each individual loading operation, and be updated after each individual tanker/drum/container is offloaded, so long as the emissions associated with the transferred but un-logged quantity (material residing in partially filled tankers) remain less than 10% of licensed limit, as estimated using the method described in this condition.

b) The log shall record the sum to date of the calendar year's emissions estimated using the method described in this condition for activities herein licensed.

c) The log shall include monthly confirmation that licensed annual emission limits have not been exceeded, that transfer flow rates remain below the limit specified in this license, and identify the radiological work package under which each loading is accomplished.

d) The estimated emissions for each loading operation shall be determined using one of the following methods:

Method 1: From the characterization of the liquid being loaded, gross alpha and gross beta/gamma activities shall be determined. The emission shall be determined using the volume of liquid transferred, an assumed release fraction of 0.001, location-specific dose conversion factors from the latest revision of HNF-3602, assuming gross alpha is 241-Am and gross beta/gamma is 137-Cs

Method 2: From the characterization of the liquid being loaded, a complete isotopic distribution of radionuclides shall be determined. The emission shall be determined using the volume of liquid transferred, an assumed release fraction of 0.001, and location-specific dose conversion factors from the latest revision of HNF-3602 for the known isotopes

(WAC 246-247-040(5), WAC 246-247-080(7), WAC 246-247-075(3))

Emission Unit ID: 891

100K

100 K diffuse/fugitive

This is a MINOR, FUGITIVE, non-point source emission unit.

100 K diffuse/fugitive emissions

Abatement Technology NONE WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	40 CFR 61, Appendix B, Method 114 (3)	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Per the sitewide ambient monitoring program

Sampling Requirements Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Waste Repackaging Outdoors at Cold Vacuum Drying Facility	AIR 08-1019	10/31/2008	742

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.51E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) Transload CVDF waste from 10 4x4x8 plywood boxes into roll-off boxes for shipment to ERDF. This will involve opening of the plywood boxes by removal of the plywood tops, and handling of the contaminated waste materials inside either manually or remotely for placement in approved ERDF roll-off boxes. The roll-off boxes are a metal container with a tarp cover for weather protection. The emptied 4x4x8 plywood boxes will be dismantled and placed in the ERDF roll-off boxes for disposal.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 4.51E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0 1.50E-04
Based on Am 241

Beta - 0 1.65E-03
Based on Cs 137

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Cm - 244	Co - 60	Cs - 137	Eu - 152
Eu - 154	Eu - 155	H - 3	Ni - 63	Pm - 147
Pu - 238	Pu - 239	Pu - 240	Pu - 241	Sb - 125
Sm - 151	Sr - 90	U - 234	U - 235	U - 238

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) One portable air monitor will be used in the vicinity of the CVDF repackaging area while re-packaging of waste is taking place.

5) If smearable contamination is found greater than 1000 dpm per 100 cm^2 beta-gamma or 20 dpm per 100 cm^2 alpha, than a visual inspection of the visible portions of the waste in the boxes will be made to determine the contamination source. Based on viusual inspect, a decision will be made to either fix the contamination, move the closed box into CDVF for rebagging, or proeceed with Environmental approval.

6) If smearable contamination is found that is greater than 50,000 dpm per 100 cm^2 beta-gamma or 1000 dpm per 100 cm^2 alpha the container will be immediately closed, WDOH will be informed, and work will cease until a path forward has been approved by management in communication with WDOH.

7) Work will not proceed if sustained winds are above 20 mph.

Emission Unit ID: 894

200W P-241UX302A-001

241-UX-302A

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the catch tank to vent to the atmosphere under tank farm storage, maintenance, and operations. Any activity other than waste transfer support, maintenance, and normal opeations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Installation and Operation of Breather Filters on Miscellaneous Tanks.	AIR 08-1014	10/16/2008	739

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.88E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.88E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

Installation of a passive breather filter on tanks 241-UX-302A, 241-AZ-154, 241-U-301B and 241-S-302. The breather filter will be a radial HEPA filter with a removal efficiency of 99.97% and a rated capacity of 40 cfm. The filter will be replaced on an annual basis, eliminating the need for annual aerosol testing. The breather filter shall minimize the amount of radioactive particulates emitted as a consequence of tank breathing due to barometric pressure changes. The catch tank will breath at a rate of approximately 0.007 cfm with a flow rate less than 1 cfm.

The 241-UX-302A catch tank is a 17,760 gallon capacity catch tank which has been isolated and currently contains 1,736 gallons of waste.

The 241-AZ-154 catch tank is a 869 gallon capacity catch tank designed to receive condensate from the 241-AZ and 241-AY double shell tank heating coils. The steam coils have sense been blanked off. Current data indicates the tank is empty. Periodically water intrusion is seen in this tank from rain and snow.

The 241-U-301B catch tank is a 36,000 gallon capacity catch tank designed to support waste transfers from 244-TX via 241-U-151 and 241-U-152. Current data indicates that 1,467 gallons of waste remain in this tank.

The 241-S-302 catch tank is a 17,700 gallon capacity catch tank designed to receive leakage, spills, line flushes and drainage associated with support waste transfers through Diversion Box 240-S-151. Since isolation in 1987 the tank has received intrusion of snow melt and rainwaterto it's present level.

The installation of breather filters is intended to minimize any radioactive particulates that may be emitted as a consequence of barometric pressure changes.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Alpha - 0	8.48E-05	Beta - 0	3.02E+00	Gamma - 0	3.14E-01
Based on Pu239/240		Based on Sr-90		Based on Cs137	

4) The breather filter must be replaced annually. The new filter must be a Type 1 (radial flow filter) with a Type C filter pack, as define by AG-1 Code on Nuclear Air and Gas Treatment Section FK, Special HEPA Filters. The filter frames, end-caps, flanges, and grilles must be made of 304/304L stainless steel. The filter must use UL-586 compliant resin to provide the sealing of the filter media to the frame. The filter must have a minimum removal efficiency of 99.97% and a rated flow of 40 cfm.

5) All removal and installation operations, of the breather filter, must follow the requirements outlined in ALARACT 1 "Demonstration for Riser Preparation/Opening", and ALARACT 16 "Demonstration for Work on Potentially Contaminated Ventilation System Components".

6) The breather filter must meet all of the requirements as described in the AG-1 COMPLIANCE MATRIX FOR FLANDERS FILTER MODEL 0-007-1-12-RF-NU-00-E3-Z04059B (or current equivalent)" as described by the AG-1 Compliance Matrix attached to the Notice of Construction application as Appendix A.

Should a change to the Compliance Matrix be required, WDOH approval of the deviation shall be obtained prior to installation of the new breather filter.

Emission Unit ID: 910

200 E P-241ER311-001

241-ER-311

This is a MINOR, PASSIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the catch tank to vent to the atmosphere under tank farm storage, maintenance, and operations. Any activity other than waste transfer support, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Removal of Liquid from Catch Tank 241-ER-311	AIR 08-1106	11/10/2008	718

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.47E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.47E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The action will include the operation of a 500 cfm portable exhauster connected to a riser in conjunction with a inlet HEPA filter to remove evaporate liquid in the 241-ER-311 Catch Tank. A small volume of the liquid may be pumped out during this activity. There may also be an insertion of a sleeve inside the existing risers to direct air flow closer to the liquid surface.

During riser preparation controls will be established using as low as reasonably achievable control technology (ALARACT 1) "Demonstration for riser preparation/opening", ALARACT 4 "Demonstration for packaging and transportation of waste", ALARACT 6 "Demonstration for pit access", ALARACT 13 "Demonstration for installation, operation, and removal of tank equipment", ALARACT 14 "Demonstration for pit work", ALARACT

15 "Demonstration for size reduction of waste equipment for disposal", and ALARACT 16 "Demonstration for work on potentially contaminated ventilation system components".

A portable, 500 cfm ventilation system will be installed on a riser on the 241-ER-311 Catch Tank. The portable exhauster consists of a skid mounted air clean-up train, which includes a heater, a pre-filter, two HEPA filters in series, and a fan, prior to the stack. During exhauster operation air from the tank will be heated before passing through the pre-filter and two HEPA filters to ensure that condensation of air stream moisture is minimized through this section. Drains in each of the filter and heater housings allow entry condensed liquid to flow away from the components and to be collected in a seal pot for removal.

Ductwork will be used to connect the exhauster inlet to the tank riser. Ductwork will essentially be fabricated in conformance with ASME B31.3 Process Piping, and it will meet the requirements of ASME AG-1, Section SA, with the exceptions noted in RPP-1923, "General WAC 246-247 Technology Standards Exemption Justification for Waste Tank Ventilation Systems".

A 500 cfm inlet HEPA filter in an ASME AG-1 compliant housing will be installed on a second riser on the 241-ER-311 to accommodate the inlet air stream created by the use of the portable exhauster. When the exhauster is not running, the inlet HEPA filter will serve as a tank barometric breather filter to provide abatement of particulate emissions from the tank.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Am - 241	4.79E-04	Cs - 137	9.36E+00	Pu - 239/240	3.36E-04
Sr - 89/90	2.88E+00				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1 Section TA. HEPA filters shall have a minimum efficiency of 99.95%.

5) The 500 CFM HEPA filter shall comply with the requirements of ASME/ANSI AG-1 Section FC, and the housing shall comply with the requirements of Section HA.

Emission Unit ID: 912

200E P-244A-003

244-A Annulus HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244-A DCRT

Emission Unit Information

Stack Height 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a double contained receiver tank (DCRT) passive breather filter ventilation system used to support tank farm operations, such as waste retrieval and operation support activities for the 241-A Tank Farm. The tank stored radioactive waste during transfer operations. Any activity other than temporary storage and normal operation support will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit has a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Isolation and Closure of Exhaust Stacks 296-A-25, 296-B-28, 296-S-22 and 296-T-18	AIR 08-1107	11/10/2008	697

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.20E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.20E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

244-S DCRT (296-S-22 STACK)

Passive Ventilation Breather Filter System Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a

set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will allow vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

The isolation and removal of the HEPA filter bank located in the 244-S DCRT filter pit will require the deactivation of the HEPA filter bank instrumentation and alarms, the removal and disposal of the HEPA filter bank, and the installation of the filter pit duct jumper assembly, in accordance with ALARACT Demonstrations 6, 14, and 16. The 296-S-22 exhauster is equipped with a HEPA filter bank inside the filter pit. The HEPA filter bank is attached to three nozzles in the filter pit: one nozzle to the catch tank, one nozzle to the annulus, and one nozzle to the ventilation exhaust ductwork. The HEPA filter bank will be disconnected from the nozzles and removed for disposal. A filter pit duct jumper assembly (4" schedule 40 pipe) will be connected to the catch tank nozzle and ventilation exhaust ductwork nozzle to provide the ventilation path to the newly installed passive breather filters. The third nozzle to the annulus will be closed in the filter pit. The filter pit duct jumper assembly will be fabricated in accordance with ASME B31.3 and tested in accordance with ASME AG-1.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-S DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system in accordance with ALARACT 16. Disconnection is the physical disconnection and removal of wires from the power source. Pit entries are not required to disconnect power or isolate instrumentation.

296-S-22 Stack Isolation:

The 296-S-22 stack will be isolated via mechanical isolations. Blank flanges will be installed on the duct end and on the suction side of the exhaust fan. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

244-TX DCRT (296-T-18 STACK)

Passive Ventilation Breather Filter Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will collect potential airborne radioactive particulates from the annulus space while allowing vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter

housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

Removal of the HEPA filter bank in the 244-TX DCRT filter pit is not required. The HEPA filter bank will be isolated via closure of manual valves and the deactivation of motor-controlled valves. Above-grade duct/pipe will be capped. The associated HEPA filter bank instrumentation and alarms will be deactivated. This work will be done in accordance with ALARACT 16.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-TX DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system. Disconnection is the physical disconnection and removal of wires from the power source in accordance with ALARACT Demonstration 16. Pit entries are not required to disconnect power or isolate instrumentation.

296-T-18 Stack Isolation:

The 296-T-18 stack will be isolated via mechanical isolations. A blank flange will be installed at the suction side of the exhaust fan or at another suitable location near the filter pit outlet to the exhaust stack. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	2.04E-02	Am - 241	1.17E+01	Am - 243	3.58E-04
Ba - 137 m	2.69E+03	C - 14	4.06E-01	Cd - 113 m	1.40E+00
Cm - 242	1.19E-02	Cm - 243	6.91E-04	Cm - 244	1.26E-02
Co - 60	6.18E-01	Cs - 134	6.84E-03	Cs - 137	2.84E+03
Eu - 152	1.18E-01	Eu - 154	9.29E+00	Eu - 155	5.09E+00
H - 3	1.53E+00	I - 129	5.01E-03	Nb - 93 m	4.18E-01
Ni - 59	1.57E-01	Ni - 63	1.46E+01	Np - 237	9.67E-03
Pa - 231	4.25E-02	Pu - 238	4.84E-01	Pu - 239	9.45E+00
Pu - 240	1.57E+00	Pu - 241	1.23E+01	Pu - 242	8.61E-05
Ra - 226	3.73E-02	Ra - 228	8.82E-03	Ru - 106	8.01E-06
Sb - 125	6.95E-01	Se - 79	1.22E-02	Sm - 151	3.74E+02
Sn - 126	6.02E-02	Sr - 90	5.31E+03	Tc - 99	2.76E+00
Th - 229	4.01E-03	Th - 232	1.13E-03	U - 232	6.22E-03
U - 233	7.78E-02	U - 234	3.07E-02	U - 235	1.28E-03

U - 236	6.36E-04	U - 238	2.87E-02	Y - 90 m	5.31E+03
Zr - 93	5.03E-01				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.

Emission Unit ID: 922

200E P-244BX-003

244-BX Annulus HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244-BX-DCRT

Emission Unit Information

Stack Height 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a double container receiver tank (DCRT) passive breather filter ventilation system used to support tank farm operations, such as but not limited to waste retrieval and operation support activities for 241-BX Tank Farm. The tanks stored radioactive waste during transfer operations. Any activity other than temporary storage and normal opeation support will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Isolation and Closure of Exhaust Stacks 296-A-25, 296-B-28, 296-S-22 and 296-T-18	AIR 08-1107	11/10/2008	697

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.20E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.20E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

244-S DCRT (296-S-22 STACK)

Passive Ventilation Breather Filter System Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a

set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will allow vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

The isolation and removal of the HEPA filter bank located in the 244-S DCRT filter pit will require the deactivation of the HEPA filter bank instrumentation and alarms, the removal and disposal of the HEPA filter bank, and the installation of the filter pit duct jumper assembly, in accordance with ALARACT Demonstrations 6, 14, and 16. The 296-S-22 exhauster is equipped with a HEPA filter bank inside the filter pit. The HEPA filter bank is attached to three nozzles in the filter pit: one nozzle to the catch tank, one nozzle to the annulus, and one nozzle to the ventilation exhaust ductwork. The HEPA filter bank will be disconnected from the nozzles and removed for disposal. A filter pit duct jumper assembly (4" schedule 40 pipe) will be connected to the catch tank nozzle and ventilation exhaust ductwork nozzle to provide the ventilation path to the newly installed passive breather filters. The third nozzle to the annulus will be closed in the filter pit. The filter pit duct jumper assembly will be fabricated in accordance with ASME B31.3 and tested in accordance with ASME AG-1.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-S DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system in accordance with ALARACT 16. Disconnection is the physical disconnection and removal of wires from the power source. Pit entries are not required to disconnect power or isolate instrumentation.

296-S-22 Stack Isolation:

The 296-S-22 stack will be isolated via mechanical isolations. Blank flanges will be installed on the duct end and on the suction side of the exhaust fan. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

244-TX DCRT (296-T-18 STACK)

Passive Ventilation Breather Filter Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will collect potential airborne radioactive particulates from the annulus space while allowing vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter

housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

Removal of the HEPA filter bank in the 244-TX DCRT filter pit is not required. The HEPA filter bank will be isolated via closure of manual valves and the deactivation of motor-controlled valves. Above-grade duct/pipe will be capped. The associated HEPA filter bank instrumentation and alarms will be deactivated. This work will be done in accordance with ALARACT 16.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-TX DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system. Disconnection is the physical disconnection and removal of wires from the power source in accordance with ALARACT Demonstration 16. Pit entries are not required to disconnect power or isolate instrumentation.

296-T-18 Stack Isolation:

The 296-T-18 stack will be isolated via mechanical isolations. A blank flange will be installed at the suction side of the exhaust fan or at another suitable location near the filter pit outlet to the exhaust stack. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	4.12E-02	Am - 241	2.37E+01	Am - 243	7.23E-04
Ba - 137 m	5.43E+03	C - 14	8.19E-01	Cd - 113 m	2.83E+00
Cm - 242	2.40E-02	Cm - 243	1.39E-03	Cm - 244	2.56E-02
Co - 60	1.25E+00	Cs - 134	1.38E-02	Cs - 137	5.74E+03
Eu - 152	2.38E-01	Eu - 154	1.88E+01	Eu - 155	1.03E+01
H - 3	3.09E+00	I - 129	1.03E-02	Nb - 93 m	8.44E-01
Ni - 59	3.18E-01	Ni - 63	2.95E+01	Np - 237	1.95E-02
Pa - 231	8.58E-02	Pu - 238	9.78E-01	Pu - 239	1.91E+01
Pu - 240	3.17E+00	Pu - 241	2.48E+01	Pu - 242	1.74E-04
Ra - 226	7.54E-02	Ra - 228	1.78E-02	Ru - 106	1.62E-05
Sb - 125	1.40E+00	Se - 79	2.46E-02	Sm - 151	7.55E+02
Sn - 126	1.22E-01	Sr - 90	1.07E+04	Tc - 99	5.57E+00
Th - 229	8.09E-03	Th - 232	2.28E-03	U - 232	1.26E-02
U - 233	1.57E-01	U - 234	6.19E-02	U - 235	2.59E-03

U - 236	1.28E-03	U - 238	5.80E-02	Y - 90	1.07E+04
Zr - 93	1.02E+00				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.

Emission Unit ID: 959

200W P-244S-003

244-S Annulus HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244 S-DCRT

Emission Unit Information

Stack Height 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a double container receiver tank (DCRT) passive breather filter ventilation system used to support tank farm operations, such as but not limited to waste retrieval and operation support activities for 241-S Tank Farm. The tanks stored radioactive waste during transfer operations. Any activity other than temporary storage and normal operation support will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission untis associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Isolation and Closure of Exhaust Stacks 296-A-25, 296-B-28, 296-S-22 and 296-T-18	AIR 08-1107	11/10/2008	697

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.20E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.20E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

244-S DCRT (296-S-22 STACK)

Passive Ventilation Breather Filter System Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a

set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will allow vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

The isolation and removal of the HEPA filter bank located in the 244-S DCRT filter pit will require the deactivation of the HEPA filter bank instrumentation and alarms, the removal and disposal of the HEPA filter bank, and the installation of the filter pit duct jumper assembly, in accordance with ALARACT Demonstrations 6, 14, and 16. The 296-S-22 exhauster is equipped with a HEPA filter bank inside the filter pit. The HEPA filter bank is attached to three nozzles in the filter pit: one nozzle to the catch tank, one nozzle to the annulus, and one nozzle to the ventilation exhaust ductwork. The HEPA filter bank will be disconnected from the nozzles and removed for disposal. A filter pit duct jumper assembly (4" schedule 40 pipe) will be connected to the catch tank nozzle and ventilation exhaust ductwork nozzle to provide the ventilation path to the newly installed passive breather filters. The third nozzle to the annulus will be closed in the filter pit. The filter pit duct jumper assembly will be fabricated in accordance with ASME B31.3 and tested in accordance with ASME AG-1.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-S DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system in accordance with ALARACT 16. Disconnection is the physical disconnection and removal of wires from the power source. Pit entries are not required to disconnect power or isolate instrumentation.

296-S-22 Stack Isolation:

The 296-S-22 stack will be isolated via mechanical isolations. Blank flanges will be installed on the duct end and on the suction side of the exhaust fan. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

244-TX DCRT (296-T-18 STACK)

Passive Ventilation Breather Filter Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will collect potential airborne radioactive particulates from the annulus space while allowing vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter

housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

Removal of the HEPA filter bank in the 244-TX DCRT filter pit is not required. The HEPA filter bank will be isolated via closure of manual valves and the deactivation of motor-controlled valves. Above-grade duct/pipe will be capped. The associated HEPA filter bank instrumentation and alarms will be deactivated. This work will be done in accordance with ALARACT 16.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-TX DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system. Disconnection is the physical disconnection and removal of wires from the power source in accordance with ALARACT Demonstration 16. Pit entries are not required to disconnect power or isolate instrumentation.

296-T-18 Stack Isolation:

The 296-T-18 stack will be isolated via mechanical isolations. A blank flange will be installed at the suction side of the exhaust fan or at another suitable location near the filter pit outlet to the exhaust stack. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	2.04E-02	Am - 241	1.17E+01	Am - 243	3.58E-04
Ba - 137 m	2.69E+03	C - 14	4.06E-01	Cd - 113 m	1.40E+00
Cm - 242	1.19E-02	Cm - 243	6.91E-04	Cm - 244	1.26E-02
Co - 60	6.18E-01	Cs - 134	6.84E-03	Cs - 137	2.84E+03
Eu - 152	1.18E-01	Eu - 154	9.29E+00	Eu - 155	5.09E+00
H - 3	1.53E+00	I - 129	5.10E-03	Nb - 93 m	4.18E-01
Ni - 59	1.57E-01	Ni - 63	1.46E+01	Np - 237	9.67E-03
Pa - 231	4.25E-02	Pu - 238	4.84E-01	Pu - 239	9.45E+00
Pu - 240	1.57E+00	Pu - 241	1.23E+01	Pu - 242	8.61E-05
Ra - 226	3.73E-02	Ra - 228	8.82E-03	Ru - 106	8.01E-06
Sb - 125	6.95E-01	Se - 79	1.22E-02	Sm - 151	3.74E+02
Sn - 126	6.02E-02	Sr - 90	5.31E+03	Tc - 99	2.76E+00
Th - 229	4.01E-03	Th - 232	1.13E-03	U - 232	6.22E-03
U - 233	7.78E-02	U - 234	3.07E-02	U - 235	1.28E-03

U - 236	6.36E-04	U - 238	2.87E-02	Y - 90	5.31E+03
Zr - 93	5.03E-01				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.

Emission Unit ID: 969

200W P-244TX-003

244-TX Annulus HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244-TX DCRT

Emission Unit Information

Stack Height 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a double container receiver tank (DCRT) passive breather filter ventilation system used to support tank farm operations, such as but not limited to wasted retrieval and operation support activities for 241-TX Tank Farm. The tanks stored radioactive waste during transfer operations. Any activity other than temporary storage and normal operation support will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Isolation and Closure of Exhaust Stacks 296-A-25, 296-B-28, 296-S-22 and 296-T-18	AIR 08-1107	11/10/2008	697

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.20E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.20E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

244-S DCRT (296-S-22 STACK)

Passive Ventilation Breather Filter System Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a

set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will allow vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

The isolation and removal of the HEPA filter bank located in the 244-S DCRT filter pit will require the deactivation of the HEPA filter bank instrumentation and alarms, the removal and disposal of the HEPA filter bank, and the installation of the filter pit duct jumper assembly, in accordance with ALARACT Demonstrations 6, 14, and 16. The 296-S-22 exhauster is equipped with a HEPA filter bank inside the filter pit. The HEPA filter bank is attached to three nozzles in the filter pit: one nozzle to the catch tank, one nozzle to the annulus, and one nozzle to the ventilation exhaust ductwork. The HEPA filter bank will be disconnected from the nozzles and removed for disposal. A filter pit duct jumper assembly (4" schedule 40 pipe) will be connected to the catch tank nozzle and ventilation exhaust ductwork nozzle to provide the ventilation path to the newly installed passive breather filters. The third nozzle to the annulus will be closed in the filter pit. The filter pit duct jumper assembly will be fabricated in accordance with ASME B31.3 and tested in accordance with ASME AG-1.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-S DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system in accordance with ALARACT 16. Disconnection is the physical disconnection and removal of wires from the power source. Pit entries are not required to disconnect power or isolate instrumentation.

296-S-22 Stack Isolation:

The 296-S-22 stack will be isolated via mechanical isolations. Blank flanges will be installed on the duct end and on the suction side of the exhaust fan. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

244-TX DCRT (296-T-18 STACK)

Passive Ventilation Breather Filter Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will collect potential airborne radioactive particulates from the annulus space while allowing vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter

housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

Removal of the HEPA filter bank in the 244-TX DCRT filter pit is not required. The HEPA filter bank will be isolated via closure of manual valves and the deactivation of motor-controlled valves. Above-grade duct/pipe will be capped. The associated HEPA filter bank instrumentation and alarms will be deactivated. This work will be done in accordance with ALARACT 16.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-TX DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system. Disconnection is the physical disconnection and removal of wires from the power source in accordance with ALARACT Demonstration 16. Pit entries are not required to disconnect power or isolate instrumentation.

296-T-18 Stack Isolation:

The 296-T-18 stack will be isolated via mechanical isolations. A blank flange will be installed at the suction side of the exhaust fan or at another suitable location near the filter pit outlet to the exhaust stack. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	4.12E-02	Am - 241	2.37E+01	Am - 243	7.23E-04
Ba - 137 m	5.43E+03	C - 14	8.19E-01	Cd - 113 m	2.83E+00
Cm - 242	2.40E-02	Cm - 243	1.39E-03	Cm - 244	2.56E-02
Co - 60	1.25E+00	Cs - 134	1.38E-02	Cs - 137	5.74E+03
Eu - 152	2.38E-01	Eu - 154	1.88E+01	Eu - 155	1.03E+01
H - 3	3.09E+00	I - 129	1.03E-02	Nb - 93 m	8.44E-01
Ni - 59	3.18E-01	Ni - 63	2.95E+01	Np - 237	1.95E-02
Pa - 231	8.58E-02	Pu - 238	4.50E+02	Pu - 239	3.16E+01
Pu - 240	1.92E+01	Pu - 241	6.28E+04	Pu - 242	1.74E-04
Ra - 226	7.54E-02	Ra - 228	1.78E-02	Ru - 106	1.62E-05
Sb - 125	1.40E+00	Se - 79	2.46E-02	Sm - 151	7.55E+02
Sn - 126	1.22E-01	Sr - 90	1.07E+04	Tc - 99	5.57E+00
Th - 229	8.09E-03	Th - 232	2.28E-03	U - 232	1.26E-02
U - 233	1.57E-01	U - 234	6.19E-02	U - 235	2.59E-03

U - 236	1.28E-03	U - 238	5.80E-02	Y - 90	1.07E+04
Zr - 93	1.02E+00				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.

Emission Unit ID: 1128

400 Area Diffuse/Fugitive

400 Area Diffuse/Fugitive Emissions

This is a MINOR, FUGITIVE, non-point source emission unit.

400 Area diffuse/fugitive emissions

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Per the sitewide ambient monitoring program

Sampling Requirements Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Associated with emissions from operations, deactivation, surveillance and maintenance, and inactive sites in the 400 Area from sources not actively ventilated.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Sodium Residuals Reaction/Removal and other Deactivation Work Activities at the Fast Flux Test Facility	AIR 08-1021	10/31/2008	646

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.70E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The activity will involve reaction of sodium residuals associated with the Fast Flux Test Facility Project systems and equipment. This activity could be conducted in place or at designated cleaning locations. Typically, the sodium residuals would be reacted with superheated steam. The primary advantages of the superheated steam process (SSP) are that it does not allow condensation to occur and component cleaning can be performed in a shorter time period. Prior to steam injection into the system to be cleaned the steam is heated to ~ 204 C (400 F). The equipment to be cleaned is heated to a minimum of 100 C (212 F) and higher if possible. Most systems will require multiple injection points. As the superheated steam reacts with the metallic sodium, the temperature increases. The temperature is controlled such that the maximum reaction temperature is no greater than ~538 C (1,000 F).

Because of the high initial temperature and the increase of the temperature caused by the reaction, no condensation occurs. The caustic formed is a liquid at the processing temperatures and because it is denser than the liquid sodium, it settles to the bottom of any pools leaving the sodium on top where it is always exposed to the superheated steam. Due to the continued exposure of the molten sodium to the superheated steam, the reaction continues at a constant rate. Superheated steam injection is continued until hydrogen is no longer being generated. The system is then cooled and rinsed and the fluid is drained from the system.

PERFORM IN PLACE CLEANING OF VESSELS, COMPONENTS, AND LARGE BORE PIPE
A PTRAEU would be used to clean, in place, large bore sodium pipe [greater than or equal to ~20 centimeter (8 inch) diameter], components and vessels in the primary and secondary sodium cooling systems. The PTRAEU also would be used to clean the Interim Decay Storage (IDS) and Fuel Storage Facility (FSF) vessels [Note: Select components in the primary sodium system, and large diameter piping and components in the secondary sodium system may be removed and cleaned in FSF or the Maintenance and Storage Facility (MASF), as described below].

Typically, penetrations into the piping/vessels would be made at appropriate locations using a low speed drill. Existing sodium heating systems would be energized, and piping/vessels heated to liquefy the existing sodium residuals. A PTRAEU would be connected to the penetration points, and used at various locations to inject the superheated steam into plant systems.

The superheated steam would be injected. Hydrogen generation would be monitored to follow the reaction. Sulfuric acid would be added to the resultant process liquid (i.e., sodium hydroxide solution) to reduce the pH to <13. This solution would be routed for offloading to tanker transport for overland transfer to Liquid Effluent Treatment Facility (LERF) and subsequent treatment at 200 Area Effluent Treatment Facility (ETF). If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

REMOVE SMALL BORE PIPE AND COMPONENTS FOR REACTION IN A CLEANING STATION
Small bore piping [<20 centimeter (8 inch) diameter], valves and other components [e.g., core component pots from IDS, fuel storage tubes from FSF, and dump heat exchangers (DHX) tube bundles] may be removed and processed in a proposed stationary cleaning station that would be located in FSF. Mechanical means (e.g., portable saws, pipe cutters) would be used to cut the pipe, valves, and components into manageable size. All heat exchanger tube bundles, which contain multiple parallel flow paths, would be dismantled to ensure effective cleaning.

The proposed FSF stationary cleaning station would consist of a chamber with removable rack for loading piping and components. The piping would be loaded at an angle, allowing the residual sodium to drain to a catch basin when heated before the injection of inert gas and/or reaction medium. The process in the cleaning station would be consistent with the in place process where the resultant waste sodium hydroxide solution is collected, the pH reduced to <13, and transported to the 200 Areas. The FSF is considered an appropriate location due to availability of sufficient floor space, existing overhead crane, available utilities, and proximity to proposed operations. If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

Cleaned piping and components would be disposed of in a Hanford Site solid waste management facility.

REMOVE LARGE COMPONENTS FOR CLEANING
The large diameter cleaning vessel (LDCV) located in the existing MASF could be used for cleaning large components following removal (e.g., primary sodium pumps, intermediate heat exchanger (IHX) tube bundles, and instrument trees). The LDCV could be retrofitted with a new super heated steam supply and associated control system for use in cleaning the aforementioned components. The IHX tube bundles, which contain multiple parallel sodium flow paths, may be dismantled to ensure effective cleaning. Small bore pipe and components also could be cleaned in MASF, if necessary.

OTHER DEACTIVATION ACTIVITIES
Other related routine, continued deactivation activities that could occur as part of the proposed action are: remove/dispose of asbestos; remove/stabilize existing hazards in conjunction with systems and equipment deactivation associated with sodium residuals; remove/recycle/dispose excess deactivated equipment and components; and remove depleted uranium and/or lead shielding.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.70E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	9.00E-15	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Alpha release rate based on Pu-239.

B/G - 0	1.50E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Beta/Gamma release rate based on Cs-137.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ba - 137 m	Co - 60	Cs - 134	Cs - 137	H - 3
Mn - 54	Na - 22	Pu - 239	Ru - 103	Zn - 65

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Operations shall be performed in accordance with the controls specified in radiation work planning documents and/or operating procedures and shall be available for inspection upon request.

5) All activities shall be conducted under the auspices of radiological or health physics control technicians or personnel. Routine field surveys, including swipes/smears, shall be conducted. Fixatives, covers, or other standard measures shall be used, as necessary to contain contamination.

6) Appropriate spill prevention procedures shall be in place to minimize release of radioactive liquid waste to the environment, and to provide immediate cleanup of any liquid spills.

7) The total amount of sodium reacted from all emission units shall not exceed 4,000 gallons per year with no more than 2,000 gallons challenging a single emission unit.

8) Other radioisotopes may be present due to activation products, fission products, decay products, and tracer gases. These other isotopes are approved for this emission unit and will not contribute significantly to the calculated potential-to-emit.

Emission Unit ID: 1129

200W P-241U301B-001

241-U-301B

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the catch tank to vent to the atmosphere under tank farm storage, maintenance and operations. Any activity other than waste transfer support, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter that operated continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Installation and Operation of Breather Filters on Miscellaneous Tanks.	AIR 08-1014	10/16/2008	739

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.88E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.88E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

Installation of a passive breather filter on tanks 241-UX-302A, 241-AZ-154, 241-U-301B and 241-S-302. The breather filter will be a radial HEPA filter with a removal efficiency of 99.97% and a rated capacity of 40 cfm. The filter will be replaced on an annual basis, eliminating the need for annual aerosol testing. The breather filter shall minimize the amount of radioactive particulates emitted as a consequence of tank breathing due to barometric pressure changes. The catch tank will breath at a rate of approximately 0.007 cfm with a flow rate less than 1 cfm.

The 241-UX-302A catch tank is a 17,760 gallon capacity catch tank which has been isolated and currently contains 1,736 gallons of waste.

The 241-AZ-154 catch tank is a 869 gallon capacity catch tank designed to receive condensate from the 241-AZ and 241-AY double shell tank heating coils. The steam coils have sense been blanked off. Current data indicates the tank is empty. Periodically water intrusion is seen in this tank from rain and snow.

The 241-U-301B catch tank is a 36,000 gallon capacity catch tank designed to support waste transfers from 244-TX via 241-U-151 and 241-U-152. Current data indicates that 1,467 gallons of waste remain in this tank.

The 241-S-302 catch tank is a 17,700 gallon capacity catch tank designed to receive leakage, spills, line flushes and drainage associated with support waste transfers through Diversion Box 240-S-151. Since isolation in 1987 the tank has received intrusion of snow melt and rainwaterto it's present level.

The installation of breather filters is intended to minimize any radioactive particulates that may be emitted as a consequence of barometric pressure changes.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Am - 241	1.11E-09	Pu - 234	1.39E-09	Sr - 82	3.33E-09
U - 0	1.28E-10	U - 0	3.28E-10	Zn - 65	7.77E-08

4) The breather filter must meet all of the requirements as described in the AG-1 COMPLIANCE MATRIX FOR FLANDERS FILTER MODEL 0-007-1-12-RF-NU-00-E3-Z04059B (or current equivalent)" as described by the AG-1 Compliance Matrix attached to the Notice of Construction application as Appendix A.

   Should a change to the Compliance Matrix be required, WDOH approval of the deviation shall be obtained prior to installation of the new breather filter.

5) All removal and installation operations, of the breather filter, must follow the requirements outlined in ALARACT 1 "Demonstration for Riser Preparation/Opening", and ALARACT 16 "Demonstration for Work on Potentially Contaminated Ventilation System Components".

6) The breather filter must be replaced annually. The new filter must be a Type 1 (radial flow filter) with a Type C filter pack, as define by AG-1 Code on Nuclear Air and Gas Treatment Section FK, Special HEPA Filters. The filter frames, end-caps, flanges, and grilles must be made of 304/304L stainless steel. The filter must use UL-586 compliant resin to provide the sealing of the filter media to the frame. The filter must have a minimum removal efficiency of 99.97% and a rated flow of 40 cfm.

Emission Unit ID: 1130

200E P-241AZ154-001

241-AZ-154

This is a MINOR, PASSIVELY ventilated emission unit.

241-AZ TANK FARM

Emission Unit Information

Stack Height 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the catch tank to vent to the atmosphere under tank farm storage, maintenance and operations. Any activity other than waste transfer support, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter that operated continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Installation and Operation of Breather Filters on Miscellaneous Tanks.	AIR 08-1014	10/16/2008	739

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.88E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.88E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

Installation of a passive breather filter on tanks 241-UX-302A, 241-AZ-154, 241-U-301B and 241-S-302. The breather filter will be a radial HEPA filter with a removal efficiency of 99.97% and a rated capacity of 40 cfm. The filter will be replaced on an annual basis, eliminating the need for annual aerosol testing. The breather filter shall minimize the amount of radioactive particulates emitted as a consequence of tank breathing due to barometric pressure changes. The catch tank will breath at a rate of approximately 0.007 cfm with a flow rate less than 1 cfm.

The 241-UX-302A catch tank is a 17,760 gallon capacity catch tank which has been isolated and currently contains 1,736 gallons of waste.

The 241-AZ-154 catch tank is a 869 gallon capacity catch tank designed to receive condensate from the 241-AZ and 241-AY double shell tank heating coils. The steam coils have sense been blanked off. Current data indicates the tank is empty. Periodically water intrusion is seen in this tank from rain and snow.

The 241-U-301B catch tank is a 36,000 gallon capacity catch tank designed to support waste transfers from 244-TX via 241-U-151 and 241-U-152. Current data indicates that 1,467 gallons of waste remain in this tank.

The 241-S-302 catch tank is a 17,700 gallon capacity catch tank designed to receive leakage, spills, line flushes and drainage associated with support waste transfers through Diversion Box 240-S-151. Since isolation in 1987 the tank has received intrusion of snow melt and rainwaterto it's present level.

The installation of breather filters is intended to minimize any radioactive particulates that may be emitted as a consequence of barometric pressure changes.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Alpha - 0	1.99E-11	Beta - 0	1.32E-08	Gamma - 0	1.27E-08
Based on 241Am		Based on 90Sr		Based on 137Cs	

4) The breather filter must meet all of the requirements as described in the AG-1 COMPLIANCE MATRIX FOR FLANDERS FILTER MODEL 0-007-1-12-RF-NU-00-E3-Z04059B (or current equivalent)" as described by the AG-1 Compliance Matrix attached to the Notice of Construction application as Appendix A.

Should a change to the Compliance Matrix be required, WDOH approval of the deviation shall be obtained prior to installation of the new breather filter.

5) All removal and installation operations, of the breather filter, must follow the requirements outlined in ALARACT 1 "Demonstration for Riser Preparation/Opening", and ALARACT 16 "Demonstration for Work on Potentially Contaminated Ventilation System Components".

6) The breather filter must be replaced annually. The new filter must be a Type 1 (radial flow filter) with a Type C filter pack, as define by AG-1 Code on Nuclear Air and Gas Treatment Section FK, Special HEPA Filters. The filter frames, end-caps, flanges, and grilles must be made of 304/304L stainless steel. The filter must use UL-586 compliant resin to provide the sealing of the filter media to the frame. The filter must have a minimum removal efficiency of 99.97% and a rated flow of 40 cfm.

Emission Unit ID: 1176

400

FFTF PTRAEU's

This is a MINOR, ACTIVELY ventilated emission unit.

FAST FLUX TEST FACILITY COMPLEX

Abatement Technology NONE WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Estimates based on sodium residuals reacted.	Ratio of dissolved isotopic sodium.	Prior to transfer; or once a calendar year during active operations.

Sampling Requirements Samples of waste water.

Additional Requirements

Estimates will be based on sample analyses of collected waste water from sodium residuals reaction. The basis for determining the maximum airborne radiological releases would be a 1:1 ratio of dissolved isotopic sodium (i.e., sodium-22) to the calculated curies released.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Sodium Residuals Reaction/Removal and other Deactivation Work Activities at the Fast Flux Test Facility	AIR 08-1021	10/31/2008	646

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.70E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The activity will involve reaction of sodium residuals associated with the Fast Flux Test Facility Project systems and equipment. This activity could be conducted in place or at designated cleaning locations. Typically, the sodium residuals would be reacted with superheated steam. The primary advantages of the superheated steam process (SSP) are that it does not allow condensation to occur and component cleaning can be performed in a shorter time period. Prior to steam injection into the system to be cleaned the steam is heated to ~ 204 C (400 F). The equipment to be cleaned is heated to a minimum of 100 C (212 F) and higher if possible. Most systems will require multiple injection points. As the superheated steam reacts with the metallic sodium, the temperature increases. The temperature is controlled such that the maximum reaction temperature is no greater than ~538 C (1,000 F).

Because of the high initial temperature and the increase of the temperature caused by the reaction, no condensation occurs. The caustic formed is a liquid at the processing temperatures and because it is denser than the liquid sodium, it settles to the bottom of any pools leaving the sodium on top where it is always exposed to the superheated steam. Due to the continued exposure of the molten sodium to the superheated steam, the reaction continues at a constant rate. Superheated steam injection is continued until hydrogen is no longer being generated. The system is then cooled and rinsed and the fluid is drained from the system.

PERFORM IN PLACE CLEANING OF VESSELS, COMPONENTS, AND LARGE BORE PIPE
A PTRAEU would be used to clean, in place, large bore sodium pipe [greater than or equal to ~20 centimeter (8 inch) diameter], components and vessels in the primary and secondary sodium cooling systems. The PTRAEU also would be used to clean the Interim Decay Storage (IDS) and Fuel Storage Facility (FSF) vessels [Note: Select components in the primary sodium system, and large diameter piping and components in the secondary sodium system may be removed and cleaned in FSF or the Maintenance and Storage Facility (MASF), as described below].

Typically, penetrations into the piping/vessels would be made at appropriate locations using a low speed drill. Existing sodium heating systems would be energized, and piping/vessels heated to liquefy the existing sodium residuals. A PTRAEU would be connected to the penetration points, and used at various locations to inject the superheated steam into plant systems.

The superheated steam would be injected. Hydrogen generation would be monitored to follow the reaction. Sulfuric acid would be added to the resultant process liquid (i.e., sodium hydroxide solution) to reduce the pH to <13. This solution would be routed for offloading to tanker transport for overland transfer to Liquid Effluent Treatment Facility (LERF) and subsequent treatment at 200 Area Effluent Treatment Facility (ETF). If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

REMOVE SMALL BORE PIPE AND COMPONENTS FOR REACTION IN A CLEANING STATION
Small bore piping [<20 centimeter (8 inch) diameter], valves and other components [e.g., core component pots from IDS, fuel storage tubes from FSF, and dump heat exchangers (DHX) tube bundles] may be removed and processed in a proposed stationary cleaning station that would be located in FSF. Mechanical means (e.g., portable saws, pipe cutters) would be used to cut the pipe, valves, and components into manageable size. All heat exchanger tube bundles, which contain multiple parallel flow paths, would be dismantled to ensure effective cleaning.

The proposed FSF stationary cleaning station would consist of a chamber with removable rack for loading piping and components. The piping would be loaded at an angle, allowing the residual sodium to drain to a catch basin when heated before the injection of inert gas and/or reaction medium. The process in the cleaning station would be consistent with the in place process where the resultant waste sodium hydroxide solution is collected, the pH reduced to <13, and transported to the 200 Areas. The FSF is considered an appropriate location due to availability of sufficient floor space, existing overhead crane, available utilities, and proximity to proposed operations. If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

Cleaned piping and components would be disposed of in a Hanford Site solid waste management facility.

REMOVE LARGE COMPONENTS FOR CLEANING
The large diameter cleaning vessel (LDCV) located in the existing MASF could be used for cleaning large components following removal (e.g., primary sodium pumps, intermediate heat exchanger (IHX) tube bundles, and instrument trees). The LDCV could be retrofitted with a new super heated steam supply and associated control system for use in cleaning the aforementioned components. The IHX tube bundles, which contain multiple parallel sodium flow paths, may be dismantled to ensure effective cleaning. Small bore pipe and components also could be cleaned in MASF, if necessary.

OTHER DEACTIVATION ACTIVITIES
Other related routine, continued deactivation activities that could occur as part of the proposed action are: remove/dispose of asbestos; remove/stabilize existing hazards in conjunction with systems and equipment deactivation associated with sodium residuals; remove/recycle/dispose excess deactivated equipment and components; and remove depleted uranium and/or lead shielding.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.70E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.80E-14	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Alpha release rate based on Pu-239.

B/G - 0	2.50E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Beta/Gamma release rate based on Cs-137.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ba - 137 m	Co - 60	Cs - 134	Cs - 137	H - 3
Mn - 54	Na - 22	Pu - 239	Ru - 106	Zn - 65

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Operations shall be performed in accordance with the controls specified in radiation work planning documents and/or operating procedures and shall be available for inspection upon request.

5) All activities shall be conducted under the auspices of radiological or health physics control technicians or personnel. Routine field surveys, including swipes/smears, shall be conducted. Fixatives, covers, or other standard measures shall be used, as necessary to contain contamination.

6) Appropriate spill prevention procedures shall be in place to minimize release of radioactive liquid waste to the environment, and to provide immediate cleanup of any liquid spills.

7) The total amount of sodium reacted from all emission units shall not exceed 4,000 gallons per year with no more than 2,000 gallons challenging a single emission unit.

8) Other radioisotopes may be present due to activation products, fission products, decay products, and tracer gases. These other isotopes are approved for this emission unit and will not contribute significantly to the calculated potential-to-emit.

Emission Unit ID: 1181

200W

Catagorical Drum Venting System 2

This is a MINOR, ACTIVELY ventilated emission unit.

TRU Waste Retrieval

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA		Up to 3 per Drum Venting System, aerosol tested annually.
	Glove Bag		Up to 3 per Drum Venting System.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		TOTAL ALPHA TOTAL BETA TOTAL GAMMA	End of each shift of operation.

Sampling Requirements Smears of the exhuast vent at the end of each shift of operation.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for the TRU retrieval project support decontamination and decommissioning operations at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the Transuranic Waste Retrieval Project	AIR 07-1012	10/19/2007	719

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.44E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) Excavation and Retrieval of Containers (drums or boxes)
Work will be performed in accordance with as low as reasonably achievable (ALARA).

The specific steps or approach to uncovering the containers will vary according to the configuration of the trench to be uncovered, the proximity of nearby trenches or fences, the designated location of the spoils pile, the planned extent of the soil removal, and other similar considerations.

Work to be performed within the V notched trenches is similar to the ongoing TRU retrieval project, but much of it may be performed within a weather resistant structure(s) that will be relocatable along the trench. Weather enclosures are effectively used for similar remediation activities at other U.S. Department of Energy (DOE) sites and in general industrial use. The use of a weather resistant enclosure could allow a more effective recovery from events involving degraded containers and potential contamination spreads.

The overburden soil will be removed to expose the waste containers. Excavation equipment will be chosen to effectively remove soil and retrieve the waste containers while minimizing damage to the containers. Excavation activities will be monitored to identify contamination that might be present and to minimize emissions.

The most efficient methodology for removing the uncontaminated overburden from the containers will include

the maximum use of conventional methods such as backhoes, front end loaders, mechanical brooms (boom mounted), or manual digging with shovels and similar hand tools. Hand tools predominantly may be used to excavate contaminated soil. High efficiency particulate air (HEPA) filtered vacuums may be used for soil excavation, and spot contamination in accordance with the HEPA filtered vacuum unit (HVU) NOC (DOE/RL 97 50, as amended). Within the V Notched trenches, it is more likely that the use of a vacuum to remove larger quantities of soil from the top surface of buried containers and soil materials in the interstices surrounding containers will be employed. Any use of the sitewide Guzzler® will be performed under the NOC applicable to the unit.

Excavation activities will be controlled closely. When the quantity of soil removed with heavy equipment has reached the logical end, hand tools, light equipment, or HVUs may be used to complete the soil removal operations and to access and remove the plastic and plywood materials (to be set aside for reuse or disposal) covering the containers.

The exposed containers will be visually inspected and surveyed for contamination. Abnormal drum conditions will be managed as follows: Contaminated containers will be decontaminated or overpacked as needed. Bulging or potentially pressurized containers will be vented. Retrieval activities will include appropriate disposition of small amounts of incidental contaminated soil (e.g., containerized or fixed in place). Larger areas of contamination could be fixed and the area posted as required by the Radiological Control organization for later disposition. Bulk transfer of contaminated soils for disposal in another trench also could occur. All containers will be inspected to verify integrity. The container inspection will consist of a visual examination to determine if there are significant corrosion, holes, dents or other visual deformities. All containers could be moved, turned, or otherwise relocated (manually or with powered equipment, slings, clamps, or appropriate rigging) to facilitate an adequate visual inspection.

Overpacking containers with minor defects (pinholes, corrosion) is routinely performed at the LLBG and CWC. Precautions will be provided to safely retrieve containers of questionable integrity. It is expected that 10 to 100 percent of the newly retrieved containers will require overpacking or some other form of confinement. Breached and heavily corroded containers will usually be overpacked before being relocated. However, if a breached or heavily corroded container can provide adequate confinement, it may be relocated to an area for overpacking. The overpacked containers will be managed according to the LLW (including mixed waste) or TRU waste designation (TRU containers are those with TRU content greater than 100 nCi/g), established by records or assay.

After a container is inspected visually and the structural integrity established, the container, if unvented, will be staged for venting, or moved to another TSD unit for venting. Retrieved TRU waste containers in their staged configuration at the LLBG will be inspected for outwardly visible signs of corrosion or degradation (overpacking as needed).

Venting of Containers
All work will be performed in accordance with the applicable operating procedures, radiological control procedures, radiological work permit (RWPs) and ALARA requirements.

Experience at other DOE sites has shown a potential for flammable gases to be present in some containers. Therefore all containers will be evaluated and vented if needed even if not specifically designated as TRU containers.

The vent filters will continue to be installed in designated containers via one of the drum venting systems that ensures personnel and environmental protection. The methodology will require penetrating the container and inserting a vent. Penetration of the lid will be accomplished by either drilling through the lid or puncturing the lid with a filter dart (using Dart System). Container venting systems are described in the following text. Designated drums slated for venting will be vented with the MDVS, Catagorical DVS, or other venting methods (with prior approval of WDOH).

MDVS (Mobile Drum Venting System)
The MDVS is enclosed in a trailer containing system equipment allowing an operator to sample and/or vent the

drum and install a NucFil® filter or equivalent. Potential emissions from MDVS operations are point source emissions. Bulging or potentially pressurized drums may be overpacked, placed in restraints and then vented.

The MDVS trailer may be equipped with a HEPA vacuum system to prevent contamination from exiting through any incidental gaps and to clean room air in the event of airborne contamination. These emissions will be accounted for with the sitewide HEPA Vacuum NOC. The system could be automatically activated when the continuous air monitor (CAM) alarms or it could be manually activated. The CAM and/or air sample results will be used to verify the PTE is within the limits of the sitewide HEPA vacuum NOC.

Dart System
The Dart System is a portable unit that clamps directly onto a drum, using a pneumatic driver remotely activated by wire or radio transmitter. This system penetrates the drum lid with minimal risk of contamination release to install a NucFil® filter with an aluminum bronze housing to prevent the possibility of sparking. Potential emissions from these operations will be considered diffuse and fugitive.

Catagorical DVS2 (Drum Venting System 2)
The DVS2 vent system, utilizing a pneumatic drill, is remotely actuated to vent the drum. After the drum is vented, a filter is hand-installed; the headspace of the drum is sampled and analyzed in the DVS2 via a sample port on the filter. The analysis process involves withdrawing a sample directly from the container head space through flexible tubing to a gas chromatograph (GC) for analysis. During analysis, the sample is heated up to 212°F (100°C) within the GC and subsequently allowed to cool to 70°F (21°C) or below before it is emitted to the atmosphere. Up to 150 of these samples are planned to be done per week per GC. No more than 9,000 drums per year will be analyzed by the combined HSGS units. Upon completion of analysis, the drum is staged in a designated area for diffusion. Glove bags may be used to contain potential contamination. A portable HEPA vacuum with a variable speed is connected to the HEPA filter on the glovebag and will be used for exhausting the glovebag. The vacuum will be operated during venting and for a short time following venting at a low flow. The vacuum may or may not be operated during the headspace analyses activities. Glovebags will also have ports to check for contamination or hazardous gases. As many as three venting assemblies will be installed in a weather enclosure such as a Conex box. Connections for the third assembly may be used with the TRU Retrieval Drum Restraint in the event of a bulged or high DE-Ci drum.

The DVS2 unit will be installed within an enclosure such as a Conex box or trailer, and within the CWC complex, with side doors that will open to accommodate loading and unloading the drums.

The HSGS analysis unit in the DVS2 will exhaust through the HEPA vacuum, although the vacuum may or may not be operating when the analysis is performed. A small percentage (0.5%) of the sample stream will be released as diffuse and fugitive.

Other Venting Methods
The venting of other containers, the majority being fiberglass reinforced plywood (FRP) boxes but could also be metal containers - hereafter referred to collectively as boxes, located in CWC and the LLBG may be done. Two venting systems for the boxes will be used. Both systems will be capable of mating to various sized boxes and will be capable of installing a Nucfil® filter or equivalent into the box headspace.

One type of vent system uses a steel plate held in place against the side of a box by a forklift as a blast shield for personnel protection in the event the container is pressurized. A rubber gasket will provide a seal between the steel plate and the box. A glove bag will then be attached to the steel plate and the box to provide for contamination control during the drilling of the box. The glove bag contains a HEPA-type filter for passive control of contaminated particulates that may escape from the box during the drilling operation. In the event contamination is encountered during filter installation, a HEPA vacuum would be connected for use only after the filter is installed. The HEPA vacuum would be subject to the sitewide HEPA vacuum NOC.

After the steel plate and glove bag are in place personnel will drill a pilot hole in the box, monitor for the presence of contamination and hazardous gases, and install a Nucfil® filter or equivalent. A time weighted release of 60 minutes per box is allowed for drilling and filter installation. These activities will be conducted

through glove ports that are an integral part of the glove bag. The drilling will be done with non-sparking and cold drilling techniques. A static dissipating cleaner manufactured by STATICO ™ or equivalent will be used to decay electrostatic build up in the fiberglass during drilling.

A second type of vent system for FRP boxes may be used that is similar to the portable DVS operating at T Plant. There could be several of these units in use within the LLBG. A glove bag with HEPA-type filter is used but without the steel plate and the drilling will be done remotely. The drill assembly and motor and bit type will remain the same. The system uses a pneumatic cold drilling technique that utilizes remote activation. The FRP venting system is placed on the top or side of the box and held in place with straps or clamps throughout the drilling and filter installation operation. A static dissipating cleaner manufactured by STATICO™ or an equivalent will be used to decay electrostatic build up in the fiberglass during drilling. A time weighted release of 60 minutes per box is allowed for drilling and filter installation. After holes are drilled, Nucfil® filters or equivalent will be hand installed in the box using glove ports in the glovebag.

In the event contamination is encountered during the installation of a Nucfil® a HEPA vacuum would be connected for use only after the Nucfil® is installed. The HEPA vacuum would be subject to the sitewide HEPA vacuum NOC.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 9.01E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.28E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Alpha release rate based on Am-241. See condition 4.			
B/G - 0	2.16E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Beta/Gamma release rate based on Cs-137. See condition 4..			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 243	Cf - 252	Cm - 244	Cs - 134
Cs - 137	Eu - 152	Eu - 154	Pu - 238	Pu - 239/240
Pu - 241	Sr - 90	U - 234	U - 235	U - 236
U - 238				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notifiy the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) A maximum of 9,000 containers of TRU waste are approved to be processed per year using the DVS or the Catagorical DVS2. The processing rate is designed to be 3 to 6 drums per hour, or a maximum of 20 minutes per drum. Only one drum shall be process at a time per catagorical DVS2 unit (Each DVS2 acquired shall be registered with the department prior to use). Using the release fraction of 1.0E-3 for particulates and a time factor of 1.9E-1 (20 minutes per container multiplied by 9, 000 containers and divided by 526,000 minutes per year) the potential unabated release rates using the DVS is 4.3E-4 Ci/yr americium 241 and 6.43E-3 Ci/yr cesium 137. These alternative release fractions are approved for this emission unit. An average of 53 DE-Ci is assumed with a maximum of 1.27 E-03 DE-Ci/yr unabated released from the staging and handling of vented containers.

5) It is recognized that other radionuclides may be present in very limited quantities.

6) The department shall be notified within 24 hours of all drum vents that fail to be installed properly and smears show >2,000 dpm/100 cm^2 alpha or >100,000 dpm/100 cm^2 beta/gamma removable contamination (an example of a "failure" is a pressure release that blows past the seat of the boot or a deflagration).

7) HEPA vacuums used for ventilation shall have an annual aerosol test performed and be demonstrated to be 99.95% removal efficiency.

8) This approval applies to these additional activities described below. No additional activities or variations on the

approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

TRU Waste Retrieval

Encountering contamination is expected during excavation; therefore, to determine a potential to emit if contamination is encountered, the administrative control points for contamination, as monitored by standard radiological field instrumentation, will be used to bound emissions based on current efficiencies of typical SWSD field contamination instruments. To determine the corresponding soil concentration in picocuries per grams of individual radionuclides, conversion factors, as developed in Soil Contamination Standards for Protection of Personnel (HNF 2418) were used. The average soil density was assumed to be 98 pounds per cubic foot. The beta gamma contributing radionuclides were assumed to be represented by cesium 137 and the alpha contributing radionuclides were assumed to be represented by americium 241 (predominant alpha contributing radionuclide in the soil is unknown; therefore, assumption of americium 241 will produce the most conservative dose consequence). The respective volumes of contaminated soil (i.e., 300 m^3, 3 m^3, and 0.3 m^3) at the three contamination levels are considered as released from manual excavation, using a release fraction of 1.0 E-3.

The potential unabated dose rate from manual excavation is 2.79 E-03 mrem/year. No credit is taken for abatement; therefore, the abated emissions are assumed as the unabated emissions. Although fixatives and similar controls would be employed for the higher contamination level and notification level contamination, no credit is being taken for abatement; therefore, the abated dose rate is the unabated dose rate.

Emission Unit ID: 1183

200W 200W S-MO444-001

HSGS Analysis Facility

This is a MINOR, ACTIVELY ventilated emission unit.

Waste Receiving and Processing Facility (WRAP)

Emission Unit Information

Stack Height: 10.00 ft. 3.05 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 70 degrees Fahrenheit. 21 degrees Celsius.

Average Stack ExhaustVelocity: 4.00 ft/second. 1.22 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(3)	Emissions will be calculated per conditions below.	Total Alpha (assumed Am-241) and Total Beta (assumed Sr-90)	

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the WRAP HSGS Analysis Facility involve laboratory scale analysis operations supporting the Hanford TRU program mission.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Head Space Gas Sampling (HSGS) Analysis at M0-444	AIR 07-304	3/23/2007	656

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 8.10E-10 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Analyses of head space gas sample/s (HSGS) will be performed on samples obtained from transuranic (TRU) solid waste storage containers in various field locations. HSGS is performed per Radioactive Air Emissions Notice of Construction Application for the TRU Retrieval Process (DOE/RL-2001-57). The HSGS protocol employs a syringe sampling system to collect head space gas samples for analysis. To sample the container head space gas, a side-port needle is pressed through the sample port septum and into the head space beneath the lid. This permits the gas to be drawn under a vacuum directly into the syringe. Samples are withdrawn into a syringe through a 0.5 micron filter (99.95% efficient, Pall Corporation or equivalent).

The syringe is transported to a field laboratory where the sample is inserted into the gas chromatograph mass spectrometer (GCMS) equipment. The emissions will be vented from the GCMS and exhausted to the atmosphere through a room exhaust fan (approx. 193 ft^3 per minute [5.5E06 ml per minute] capacity). The process involves injecting the sample from the syringe into the GCMS for analysis. The analysis involves heating the gas to greater than 200 degrees Centigrade and then emitting the analyzed gas at a rate of approximately 30 ml per minute. Up to 150 of these samples are planned to be done per week.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 8.10E-10 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	4.70E-11	Gas	WAC 246-247-030(21)(a)
Alpha release rate is assumed to be Am-241.			
B/G - 0	7.00E-10	Gas	WAC 246-247-030(21)(a)
Beta/Gamma release rate is assumed to be Sr-90			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 243	Cf - 252	Cm - 244	Cs - 134
Cs - 137	Eu - 152	Eu - 154	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Sr - 90		

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notifiy the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) The number of samples processed in a year shall not exceed 7800. (WAC 246-247-060(5))

5) All radionuclide's are assumed to be either americium-241 (alpha) or strontium-90 (beta-gamma), although any radionuclide isotope could be encountered. (WAC 246-247-060(5))

6) Radioactive air emissions will be calculated as follows:
Drum Headspace Concentration X Sample Volume X Filter Efficiency X Samples/yr X Release Factor X Unit Dose Factor. (WAC 246-247-075(3))

Emission Unit ID: 1185

300

361 Building

This is a MINOR, FUGITIVE, non-point source emission unit.

300 Diffuse/Fugitive Emissions

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	None	Radioxenon and radon	None

Sampling Requirements Radionuclide emissions will be determined using 40 CFR 61 Appendix D calculations in lieu of monitoring.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the 361 Building in Testing Equipment Operability Utilizing Radioxenon and Radon	AIR 08-403	4/14/2008	657

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.05E-04 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   The proposed action is to perform equipment operability utilizing radioxenon and radon to evaluate atmospheric gases. Releases will occur inside the building after being routed through the sample system and collected in a sample archive bottle. Any remaining radioactive gases will be a fugitive emission from the building.

   The 361 Building is a pre-cast concrete portable equipment shelter that is permanently located in the southwest corner of the 300 Area on the Hanford Site. Sampling equipment (i.e., Swedish Automatic Unit for Noble gas and Acquisition and analysis [SAUNA]) will be installed to sample atmospheric xenon some of which may be radioactive. Periodically a radioactive xenon and/or radon calibration gas will be used to confirm operability of the instrument. The SAUNA is a collection and analysis system. Radioxenon and radon will be consumed by the system, analyzed, transferred to an archive storage bottle, and then finally released by evacuating the archive bottle into the room air space.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 2.05E-04 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Rn - 222	2.00E-02	Gas	WAC 246-247-030(21)(a)
Xe - 122	6.70E-03	Gas	WAC 246-247-030(21)(a)
Xe - 123	5.40E-03	Gas	WAC 246-247-030(21)(a)

Xe - 125	2.70E-03	Gas	WAC 246-247-030(21)(a)
Xe - 127	2.00E-03	Gas	WAC 246-247-030(21)(a)
Xe - 131 m	2.00E-01	Gas	WAC 246-247-030(21)(a)
Xe - 133	4.20E-01	Gas	WAC 246-247-030(21)(a)
Xe - 133 m	2.50E-01	Gas	WAC 246-247-030(21)(a)
Xe - 135	2.00E-02	Gas	WAC 246-247-030(21)(a)
Xe - 135 m	2.00E-02	Gas	WAC 246-247-030(21)(a)
Xe - 137	1.00E-02	Gas	WAC 246-247-030(21)(a)
Xe - 138	1.00E-02	Gas	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Rn - 222	Xe - 122	Xe - 123	Xe - 125	Xe - 127
Xe - 131 m	Xe - 133	Xe - 133 m	Xe - 135	Xe - 135 m
Xe - 137	Xe - 138			

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Because the total unabated potential-to-emit (PTE) for this project is < 0.1 mrem/yr total effective dose equivalent (TEDE) to the maximally exposed individual (MEI), the radionuclide emissions will be determined using 40 CFR 61 Appendix D calculations in lieu of monitoring. [WAC 246-247-040(5), -060(5)]

Emission Unit ID: 1186

200

Decon Trailer (intermittent powered exhaust)

This is a MINOR, ACTIVELY ventilated emission unit.

Miscellaneous Support Facilities

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Fan	1	Intermittent operation

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[2]	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Sampling Requirements Per the sitewide ambient monitoring program

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
200/600 Areas Facilities Support Decontamination Trailer (Intermittent powered exhaust)	AIR 07-1102	11/15/2007	678

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.73E-04 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The decontamination trailer will be comprised of two rooms; one for decontamination activities, and one for support equipment. The decontamination room will have overhead showers (one low flow and one higher flow) and washing and decontamination fixtures. A support equipment room will be adjacent to the decontamination room and contain support systems, e.g. generator, water storage, pumps. The decontamination trailer will be self contained to include a generator, heating, ventilation, air conditioning (HVAC), clean water storage and waste water collection systems. The decontamination trailer will be moved from job to job, within the 200 Area and the adjacent 600 Area(i.e., the area up to 70 meters south of the 200 E Area, as far west as B-pond, as far north as the 212-N, P, and R buildings, the area between the 200E and 200W Areas and as far south as the S-pond.)
Waste water from the collection system will be transferred to other licensed container(s).

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.73E-04 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	2.00E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Alpha release rates based on Am-241. While the potential release rates for all emissions are conservatively represented by Am-241 (alpha) and Cs-137 + D (beta-gamma), essentially any radionuclide may be present.

B/G - 0	1.00E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/Gamma release rates based on Cs-137 +D. While the potential release rates for all emissions are conservatively represented by Am-241 (alpha) and Cs-137 + D (beta-gamma), essentially any radionuclide may be present.

4) Periodic Confirmatory Measurements (PCM) for the vented and diffuse and fugitive emissions will be provided by the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

5) Emissions will be included in the overall fugitive and diffuse emission estimate for reporting purposes as part of the approved ambient air monitoring conducted at the Hanford Site perimeter.

Emission Unit ID: 1187

200

Decon Trailer (Collection Tank Vents)

This is a MINOR, PASSIVELY ventilated emission unit.

Miscellaneous Support Facilities

Abatement Technology NONE WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[2]	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Sampling Requirements Per the sitewide ambient monitoring program

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
200/600 Areas Facilities Support Decontamination Trailer (Intermittent powered exhaust)	AIR 07-1102	11/15/2007	678

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.73E-04 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The decontamination trailer will be comprised of two rooms; one for decontamination activities, and one for support equipment. The decontamination room will have overhead showers (one low flow and one higher flow) and washing and decontamination fixtures. A support equipment room will be adjacent to the decontamination room and contain support systems, e.g. generator, water storage, pumps. The decontamination trailer will be self contained to include a generator, heating, ventilation, air conditioning (HVAC), clean water storage and waste water collection systems. The decontamination trailer will be moved from job to job, within the 200 Area and the adjacent 600 Area(i.e., the area up to 70 meters south of the 200 E Area, as far west as B-pond, as far north as the 212-N, P, and R buildings, the area between the 200E and 200W Areas and as far south as the S-pond.)
Waste water from the collection system will be transferred to other licensed container(s).

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.73E-04 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	2.00E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Alpha release rates based on Am-241. While the potential release rates for all emissions are conservatively represented by Am-241 (alpha) and Cs-137 + D (beta-gamma), essentially any radionuclide may be present.

B/G - 0	1.00E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/Gamma release rates based on Cs-137 +D. While the potential release rates for all emissions are conservatively represented by Am-241 (alpha) and Cs-137 + D (beta-gamma), essentially any radionuclide may be present.

4) Periodic Confirmatory Measurements (PCM) for the vented and diffuse and fugitive emissions will be provided by

the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

5) Emissions will be included in the overall fugitive and diffuse emission estimate for reporting purposes as part of the approved ambient air monitoring conducted at the Hanford Site perimeter.

Emission Unit ID: 1207

200W P-241SX107-001

241-SX-107

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1208

200W P-241SX108-001

241-SX-108

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1209

200W P-241SX109-001

241-SX-109

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1210

200W P-241SX110-001

241-SX-110

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1211

200W P-241SX111-001

241-SX-111

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1212

200W P-241SX112-001

241-SX-112

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1213

200W P-241SX114-001

241-SX-114

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1219

200W P-241SX101-001

241-SX-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1220

200W P-241SX102-001

241-SX-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1221

200W P-241SX103-001

241-SX-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1222

200W P-241SX104-001

241-SX-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1223

200W P-241SX105-001

241-SX-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1224

200W P-241SX106-001

241-SX-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1227

200W P-241S304-001

241-S-304

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
	40 CFR 61, Appendix B Method 114		

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

Emission Unit ID: 1228

600 P-6241V-001

6241-V Vent Station Cross Site

This is a MINOR, PASSIVELY ventilated emission unit.

Cross Site Vent Station 6241

Emission Unit Information

Stack Height ft. m. Stack Diameter ft. m.

Average Stack Effluent Temperature: degrees Fahrenheit. degrees Celsius.

Average Stack ExhaustVelocity: 8.30 ft/second. 2.53 m/second.

Abatement Technology ALARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

Emission Unit ID: 1229

200E P-241A417-001

241-A-417

This is a MINOR, PASSIVELY ventilated emission unit.

241-A TANK FARM

Emission Unit Information

Stack Height 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Passive Breather Filter (HEPA)		

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

Emission Unit ID: 1230

600 P-6241A-001

6241-A Diversion Box

This is a MINOR, PASSIVELY ventilated emission unit.

Diversion Box

Emission Unit Information

Stack Height ft. m. Stack Diameter ft. m.

Average Stack Effluent Temperature: degrees Fahrenheit. degrees Celsius.

Average Stack ExhaustVelocity: 8.30 ft/second. 2.53 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

Emission Unit ID: 1231

200 P-241EW151-001

241-EW-151

This is a MINOR, PASSIVELY ventilated emission unit.

214-EW

Emission Unit Information

Stack Height 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
Tank vents	Passive Breather Filter (HEPA)	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

Emission Unit ID: 1232

200W P-241S302-001

241-S-302

This is a MAJOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height 5.00 ft. 1.52 m. Stack Diameter 0.13 ft. 0.04 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Passive Breather Filter (HEPA)		Operation of Passive Breather Filter on Catch Tank 241-S-302.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Once per month.

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Annual NDA of the filter shall be conducted for reporting purposes.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the catch tank to vent to the atmosphere under tank farm storage, maintenance, and operations. Any activity other than waste transfer support, maintenance, and normal opeations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Installation and Operation of Breather Filters on Miscellaneous Tanks.	AIR 08-1014	10/16/2008	739

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.88E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.88E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

Installation of a passive breather filter on tanks 241-UX-302A, 241-AZ-154, 241-U-301B and 241-S-302. The breather filter will be a radial HEPA filter with a removal efficiency of 99.97% and a rated capacity of 40 cfm. The filter will be replaced on an annual basis, eliminating the need for annual aerosol testing. The breather filter shall minimize the amount of radioactive particulates emitted as a consequence of tank breathing due to barometric pressure changes. The catch tank will breath at a rate of approximately 0.007 cfm with a flow rate less than 1 cfm.

The 241-UX-302A catch tank is a 17,760 gallon capacity catch tank which has been isolated and currently contains 1,736 gallons of waste.

The 241-AZ-154 catch tank is a 869 gallon capacity catch tank designed to receive condensate from the 241-AZ and 241-AY double shell tank heating coils. The steam coils have sense been blanked off. Current data indicates the tank is empty. Periodically water intrusion is seen in this tank from rain and snow.

The 241-U-301B catch tank is a 36,000 gallon capacity catch tank designed to support waste transfers from 244-TX via 241-U-151 and 241-U-152. Current data indicates that 1,467 gallons of waste remain in this tank.

The 241-S-302 catch tank is a 17,700 gallon capacity catch tank designed to receive leakage, spills, line flushes and drainage associated with support waste transfers through Diversion Box 240-S-151. Since isolation in 1987 the tank has received intrusion of snow melt and rainwaterto it's present level.

The installation of breather filters is intended to minimize any radioactive particulates that may be emitted as a consequence of barometric pressure changes.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Am - 241

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 60

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 152

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 94

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

RuRh - 106

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 144

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 134

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 154

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 239/240 3.05E+00

Identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls.

Sb - 125

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 243

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 137

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 155

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 226

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 89/90 1.58E+03

Identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls.

4) The breather filter must meet all of the requirements as described in the AG-1 COMPLIANCE MATRIX FOR FLANDERS FILTER MODEL 0-007-1-12-RF-NU-00-E3-Z04059B (or current equivalent)" as described by the AG-1 Compliance Matrix attached to the Notice of Construction application as Appendix A.

Should a change to the Compliance Matrix be required, WDOH approval of the deviation shall be obtained prior to installation of the new breather filter.

5) All removal and installation operations, of the breather filter, must follow the requirements outlined in ALARACT 1 "Demonstration for Riser Preparation/Opening", and ALARACT 16 "Demonstration for Work on Potentially Contaminated Ventilation System Components".

6) The breather filter must be replaced annually. The new filter must be a Type 1 (radial flow filter) with a Type C filter pack, as define by AG-1 Code on Nuclear Air and Gas Treatment Section FK, Special HEPA Filters. The filter frames, end-caps, flanges, and grilles must be made of 304/304L stainless steel. The filter must use UL-586 compliant resin to provide the sealing of the filter media to the frame. The filter must have a minimum removal efficiency of 99.97% and a rated flow of 40 cfm.

7) The TEDE from 241-S-302 emission unit shall not exceed 1.88E-01

Emission Unit ID: 1243

200 200 W-TRUDECON-001

Decon Trailer TRU Waste Retrieval (Intermit. Op.)

This is a MINOR, PASSIVELY ventilated emission unit.

Miscellaneous Support Facilities

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[2]	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Sampling Requirements Per the sitewide ambient monitoring program

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Decontamination Trailer at the Transuranic Waste Retrieval Project	AIR 09-502	5/12/2009	743

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.55E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   All work will be performed in accordance with approved radiological control methods and as low as reasonably achievable (ALARA) program requirements. These requirements will be carried out through radiological control procedures.

   The general physical processes associated with decontamination activities in the decontamination trailer will consist of the following:

   On identification of the need for additional decontamination of personnel, affected individuals will be escorted to the decontamination trailer.

   As appropriate, contaminated clothing, coverings, and/or articles will be removed, packaged, and dispositioned in accordance with applicable facility waste handling procedures.

   Personnel decontamination processes might include various methods or a combination of cleaning agents (e.g., soap and water, pre-moistened towelettes, shaving cream-type foam decontamination agents for facial areas; removal of hair; and abrasive soaps for

toughened skin surfaces [e.g., hands and feet]).

Spent decontamination solutions will be transferred from the holding tanks directly to a mobile disposal unit or containerized (e.g., packaged in absorbents in drums or placed in drums or carboys) and transported to existing facilities on the Hanford Site for disposal.

Periodic maintenance inspections of the decontamination trailer will be performed without use of containment or portable exhausters.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.55E-05 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	8.37E-04	Solid	WAC 246-247-030(21)(a)
Alpha release rate based on Am-241. Any radionuclide might be present Am-241 is representative of the alpha-emitting radionuclides present.			
Cs - 137	4.19E-03	Solid	WAC 246-247-030(21)(a)
Beta/Gamma release rate based on Cs-137. CS-137 is representative of the Beta/gamma-emitting radionuclides present.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241 Cs - 137

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Periodic Confirmatory Measurements (PCM) for the passively vented emissions shall be provided by the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

Emission Unit ID: 1244

200 W-TRUDECON-002

Decon Trailer TRU (Collection Tank Vents)

This is a MINOR, PASSIVELY ventilated emission unit.

Miscellaneous Support Facilities

Abatement Technology NONE WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Decontamination Trailer at the Transuranic Waste Retrieval Project	AIR 09-502	5/12/2009	743

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.55E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   All work will be performed in accordance with approved radiological control methods and as low as reasonably achievable (ALARA) program requirements. These requirements will be carried out through radiological control procedures.

   The general physical processes associated with decontamination activities in the decontamination trailer will consist of the following:

   On identification of the need for additional decontamination of personnel, affected individuals will be escorted to the decontamination trailer.

   As appropriate, contaminated clothing, coverings, and/or articles will be removed, packaged, and dispositioned in accordance with applicable facility waste handling procedures.

   Personnel decontamination processes might include various methods or a combination of cleaning agents (e.g., soap and water, pre-moistened towelettes, shaving cream-type foam decontamination agents for facial areas; removal of hair; and abrasive soaps for toughened skin surfaces [e.g., hands and feet]).

   Spent decontamination solutions will be transferred from the holding tanks directly to a mobile disposal unit or containerized (e.g., packaged in absorbents in drums or placed in drums or carboys) and transported to existing facilities on the Hanford Site for disposal.

Periodic maintenance inspections of the decontamination trailer will be performed without use of containment or portable exhausters.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.55E-05 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	8.37E-04	Solid	WAC 246-247-030(21)(a)

Alpha release rate based on Am-241. Any radionuclide might be present Am-241 is representative of the alpha-emitting radionuclides present.

Cs - 137	4.19E-03	Solid	WAC 246-247-030(21)(a)

Beta/Gamma release rate based on Cs-137. CS-137 is representative of the Beta/gamma-emitting radionuclides present.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241 Cs - 137

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Periodic Confirmatory Measurements (PCM) for the vented and diffuse and fugitive emissions shall be provided by the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

5) Emissions will be included in the overall fugitive and diffuse emission estimate for reporting purposes as part of the approved ambient air monitoring conducted at the Hanford Site perimeter.

Emission Unit ID: 1249

200W P-241S102-002

241-S-102 Inlet Filter

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology NONE WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1250

600 J-Hammer-001

HAMMER

This is a MINOR, FUGITIVE, non-point source emission unit.

HAMMER

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(4)	In accordance with the Radiation Protection Plan and Radiological Control Manual .	TOTAL BETA/GAMMA	During each use of material

Sampling Requirements After each use - with radiological surveys/smears .

Additional Requirements

Radioactive material survey and inventory records will be maintained for the activity to demonstrate that total Tc-99m usage each calendar year stays below the projected annual possession quantity.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Training using Tc-99m (Technetium-99 metastable) within the Hazardous Materials Management and Emergency Response (HAMMER) training complex, but will typically occur at either 1) a tank farm simulator facility on the western side of the complex; 2) a tactical maze building in the northeast corner of the complex; 3) a simulated hazardous waste facility in the north central part of the complex; or 4) a training tower near the center of the complex.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Use of Radioactive Materials at the Volpentest HAMMER/Hanford Training and Education Center	AIR 09-903	9/15/2009	749

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 8.30E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   The activities that will utilize the radioactive material Tc-99m will simulate what may be encountered in the event of a radiological dispersal type incident. A syringe or other low pressure spray device will be used to disperse droplets of Tc-99m solution into/onto various chosen surfaces, including but not limited to, lab ware, tabletops, and/or mock improvised explosive components. After the Tc-99m is dispersed, the training area will be surveyed to ensure the contamination is limited to the desired surfaces. The proposed activities could take place at any suitable location within the HAMMER training complex, but will typically occur at either 1) a tank farm simulator facility on the western side of the complex; 2) a tactical maze building in the northeast corner of the complex; 3) a simulated hazardous waste facility in the north central part of the complex; or 4) a training tower near the center of the complex. The proposed activities will take place at least 90 meters from either of the designated dose receptor locations (Al Alm Building or Administration Building).

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 8.30E-05 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Tc - 99 m	1.56E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Tc - 99 m

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) No aerial dispersion (means any dispersion directly up into the atmosphere or directly out over the ground with no selected target) of Tc-99m shall be permitted. WAC 246-247-040(5) and 060(5)

5) After the Tc-99m is dispersed, the training area shall be surveyed to ensure the contamination is limited to the desired surfaces. WAC 246-247-040(5) and 060(5)

6) Application of Tc-99m solutions shall be limited to a syringe or low pressure garden sprayer. WAC 246-247-040(5) and 060(5)

7) Any other building/site that HAMMER personnel want to apply Tc-99m shall get prior approval from the Department if those buildings are less than 90 meters from either the Al Alm building or HAMMER administrative building. WAC 246-247-040(5) and 060(5)

8) No Tc-99m shall be applied outdoors when sustained wind conditions reach or exceed 20 miles per hour. WAC 246-247-040(5) and 060(5)

9) A log of radioactive materials inventory shall be maintained for the proposed activities to demonstrate total Tc-99m usage for the calendar year. WAC 246-247-040(5) and 060(5)

10) After each training evolution, potentially contaminated materials and equipment shall be packaged and moved to a radioactive materials management area at HAMMER for a minimum of 10 half-lives (approximately 60 hours) to allow the Tc-99m contamination to decay to less than background levels.WAC 246-247-040(5) and 060(5)

11) The training area shall be surveyed to verify there is no remaining contamination before it is released to general public. WAC 246-247-040(5) and 060(5)

12) Radiation protection personnel and/or physical barriers shall be used to control access to the training areas being contaminated. WAC 246-247-040(5) and 060(5)

13) If contamination is found outside the controlled area, it shall be removed using sticky tape, wipes, or other simular appropriate decontamination methods. WAC 246-247-040(5) and 060(5)

Enclosure 2 Table 2-1 Diffuse and Fugitive Emission Units

Table 2–1. The List of Current Diffuse or Fugitive Radioactive Air Emission Sources at the Hanford Site. See Section 5.0, Method for Monitoring and Reporting of Diffuse and Fugitive Sources and Emissions, of the License for a description of monitoring and reporting requirements.

169 P-241ER153-001

170 P-241ER152-001

404 P-296B002-001

424 P-340BBLDG-001

477 J-241ER152-001

808 V10-11-1

809 216A-2-2

818 State Approved Land Disposal Structure Pipeline 1

819 State Approved Land Disposal Structure Pipeline 2

820 State Approved Land Disposal Structure Pipeline 3

821 State Approved Land Disposal Structure Pipeline 4

822 State Approved Land Disposal Structure Pipeline 5

823 State Approved Land Disposal Structure Pipeline 6

824 State Approved Land Disposal Structure Pipeline 7

825 State Approved Land Disposal Structure Pipeline 8

826 State Approved Land Disposal Structure Pipeline 9

827 State Approved Land Disposal Structure Pipeline 10

828 State Approved Land Disposal Structure Pipeline 11

829 State Approved Land Disposal Structure Pipeline 12

830 State Approved Land Disposal Structure Pipeline 13

832 WESF LLW Floor Drain Vent (Central)

833 WESF LLW Floor Drain Vent (Southeast)

841 291-B-1

887 J-244ER152-002

895 200-E-44

896 200-E-5

897 200-E-117

898 200-E-118

900 200-E-121

901 200-E-125

902 207-B

903 207-A-SOUTH

904 216-A-24

906 216-B-3

907 218-E-10

908 218-E-12A

909 218-E-12B

911 241-A-302A

913 P-241ER151-001

914 P-241AX155-001

915 P-241AR151-001

916 241-A

917 241-AN

918 241-AP

919 241-AW

920 241-AX

921 241-AY

923 241-AZ

924 241-B

925 241-BX-154

926 241-BX

927 241-EW-151

928 244-AR Vault

929 UPR-200-E-18

930 UPR-200-E-100

931 UPR-200-E-112

932 241-C

933 UPR-200-E-78

934 UPR-200-E-84

935 UPR-600-20

936 200-W-54

937 200-W-81

938 200-W-82

939 200-W-83

940 200-W-84

941 200-W-92

942 200-W-106

943 207-U

944 216-T-4b

945 218-W-3A

946 218-W-3AE

947 218-W-4B

948 218-W-4C

949 231-W-151

950 241-S

951 241-SX

952 241-SY

953 241-T

954 241-TX

955 241-TX-154

956 241-TX-155

957 241-TY

958 241-U

960 241-U-151

961 241-U-152

962 242-T-135

963 291-S

964 291-U

965 600-148

966 UPR-200-W-38

967 UPR-20-W-65;UPR-200-W-73

968 UPR-200-W-82

970 UPR-200-W-113

Table 2–1. The List of Current Diffuse or Fugitive Radioactive Air Emission Sources at the Hanford Site. See Section 5.0, Method for Monitoring and Reporting of Diffuse and Fugitive Sources and Emissions, of the License for a description of monitoring and reporting requirements.

971 UPR-200-E-83	972 UPR-200-N-1	973 116-K-3
978 2025EC71	979 203A	980 204A
981 206A	982 207BA	983 207S
984 207SL	985 210A	986 210E
987 211A	988 211B	989 211BA
990 211BA151	991 211BB	992 211S
993 211T	994 211T52	995 212A
996 212B	997 212N	998 212P
999 212R	1000 213A	1001 214T
1002 215C	1003 216A	1004 216A29A
1005 216A524	1006 216E28A	1007 216E28B
1008 216E28C	1009 216ZP1	1010 216ZP1A
1011 216ZP1B	1012 216ZP1C	1013 217B
1014 218B	1015 218E14	1016 218E15
1017 218E7	1018 221A	1019 221BA
1020 221BB	1021 221BC	1022 221BD
1023 221BF	1024 221BG	1025 221BK
1026 221TA	1027 211TB	1028 222B
1029 222T	1030 224U	1035 225EC
1036 225W	1037 225WA	1038 231Z
1039 241B361	1040 241WR	1041 2420W
1042 242AL11	1043 242B	1044 242BL
1045 252AB	1046 252AC	1047 2706T
1048 2706TA	1049 2706TB	1050 2710S
1051 2711A	1052 2711B	1053 2711S
1054 2712A	1055 2713W	1056 2714A
1057 2715B	1058 2716B	1059 2716T
1060 2718S	1061 271B	1062 271BA
1063 271T	1064 271U	1065 2727W
1066 272B	1067 272BA	1068 272BB
1069 275EA	1070 276B	1071 276C
1072 276S	1073 276S141	1074 276S142
1075 276U	1076 281A	1077 2901A
1078 2904S160	1079 2904S170	1080 2904S171
1081 2904S172	1082 2904SA	1083 291A
1084 291AA	1085 291AB	1086 291AC
1087 291AD	1088 291AE	1089 291AF

Table 2–1. The List of Current Diffuse or Fugitive Radioactive Air Emission Sources at the Hanford Site. See Section 5.0, Method for Monitoring and Reporting of Diffuse and Fugitive Sources and Emissions, of the License for a description of monitoring and reporting requirements.

1090 291AG	1091 291AH	1092 291AJ
1093 291AK	1094 291B	1095 291BA
1096 291BB	1097 291BC	1098 291BD
1099 291BF	1100 291BG	1101 291BH
1102 291BJ	1103 291BK	1104 292AA
1105 292AB	1106 292B	1107 292S
1108 292T	1109 292U	1110 293A
1111 293S	1112 294A	1113 294B
1114 295A	1115 295AA	1116 295AB
1117 295AC	1118 295AD	1119 295AE
1120 296S012	1121 307	1122 403
1123 4713C	1124 4717	1125 Alkali Metal
1136 241-BY	1137 241-A-401	1138 241-A-431
1140 241-AP-271	1141 241-BY-254	1142 241-BY-301
1143 241-BY-302	1144 241-CX-70	1145 241-CX-71
1146 241-CX-72	1147 242-A-702	1148 243-G-8
1149 2707-AR	1150 2714-S	1151 271-CR
1152 292-AR		

Enclosure 3 ALARACT Agreements

ALARACT 1

TANK FARM ALARACT DEMONSTRATION FOR RISER PREPARATION/OPENING

1. **Description of Activity/Requirements**

This ALARACT demonstration applies to risers which open directly into tanks containing high level waste, such as waste storage tanks, catch tanks, double contained receiver tanks and IMUSTs. Other potentially, and known, contaminated risers in Tank Farm facilities shall be accessed using appropriate controls from the HNF-5183, Tank Farms Radiological Control Manual and the latest revision of the Radiological Containment Guide matrix and the latest revision of the Containment Selection Guide, Attachment A, in TFC-ESHQ-RP_RWP-C-02, latest revision.

Risers may have screw caps, blind flanges, shield plugs, or equipment installed in them. Preparation may include the following:

Screw caps: A pre-work survey is completed of the riser and the area around the riser. Soil covering is installed around the riser. If the riser or screw cap is highly contaminated, a glove bag may be installed to control contamination spread. Slight contamination is wiped off the riser with damp rags.

Blind flanges: A pre-work survey is completed of the riser and the immediate work area around the riser, a glove bag may be used to contain the blind flange during removal. Slight contamination is removed with damp rags.

Shield plugs and other equipment to be removed from risers: Risers may have various types of equipment installed. The equipment will be installed and removed per ALARACT 13. To open the riser, it will be necessary to remove the equipment. A pre-work survey is completed of the riser, installed equipment, and the area around the riser. Soil covering is installed around the risers. If necessary, glove bags or sleeving may be used on smaller pieces of equipment to be removed. Larger items may require the need for a windbreak or containment tent.

When the riser is opened, Industrial Hygiene samples may be taken.

All containments used are in accordance with the Containment Selection Guide, Attachment A, found in TFC-ESHQ-RP_RWP-C-02, latest revision.

Soil covering may be of a material such as, plastic sheeting, rubber matting, foil backed paper, griflon, or any material that will prevent possible contamination from reaching the soil.

The riser will be closed after all riser activities are completed

2. **Radiological Controls**

a. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4)

b. Follow ALARACT demonstration for "Installation, Operation, and Removal of Equipment" (ALARACT 13)

c. Pre-job survey is performed

d. Use approved Containment Selection Guide, Attachment A, from TFC-ESHQ-RP_RWP-C-02, latest revision.

e. Do not open risers if sustained winds are >25 mph. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, provided the reading is taken in an unobstructed location that is representative of the work area. Use of a local device and the measured wind speed readings taken from it must be documented in the Work Record.

f. Open riser time will be minimized.

g. HPT coverage will be performed as specified in the Radiological Work Permit

3. **Monitoring**
   a. At a minimum, pre and post-job surveys (smears) shall be taken.

   b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual

4. **Records/Documentation**
   a. Work Package

   b. Radiological Work Permit

   c. Radiological survey report(s)

5. **Emission Pathway**
   a. Existing, active or passive point source

6. **Facility Description**
   a. All Tank Farm Facilities

ALARACT 2

TANK FARM ALARACT DEMONSTRATION FOR INSTALLATION/OPERATION/REMOVAL OF PUSH MODE CORE SAMPLING EQUIPMENT

1. **Description of Activity/Requirements**

Push Mode Core Sampling (PMCS) is conducted with the Rotary Mode Core Sampling (RMCS) System. The RMCS System can operate in either push mode or rotary mode. The preferred mode of RMCS sampling is push mode, which does not involve rotation of the drill string or significant purge gas flow, and is the subject of this ALARACT demonstration. Each RMCS System consists of the sample truck, an optional diesel powered electric generator, an optional in-tank video camera, a pressurized nitrogen supply, and other support equipment. In addition to the three RMCS Systems, there is one PMCS System that operates only in push mode

Core Sampling system set up and sampling are controlled by operating procedures. Prior to moving the RMCS truck and equipment onto a tank, a walk down is performed. The walk down identifies any physical obstructions/barriers to truck placement and verifies the riser locations. The Core Sampling truck and equipment are then moved to the tank farm for system set up. System set up includes installation of the riser sleeve and riser equipment. This requires that the riser flange cover be removed. Following removal of the riser flange cover, the riser sleeve and riser adapter equipment are installed. This equipment seals against the riser flange, protecting the air pathway. The time between the removal of the flange cover and installation of the riser adapter equipment is kept to the minimum necessary to safely complete the task. HPT coverage is provided the entire time the riser is open.

The operation of core sampling begins by inserting a drill string made up of drill rod sections, into the waste. The first section to be installed is the core barrel in which the core sampler itself is seated. The rotary mode core samplers contain a seal against the bottom of the core barrel. The seal is designed to prevent back flow of tank waste into the drill string. This protects the air pathway out of the tank. The remaining drill rod sections are screwed on to the drill string and inserted into the tank until the starting point for the first core sample segment is reached.

After the first core sample segment has been taken, additional drill string sections and samplers may be added as needed. During push mode sampling, nitrogen (or other fluid such as water with a Lithium Bromide tracer) is used only in amounts sufficient to maintain the hydrostatic head and prevent or minimize movement of tank waste into the core barrel.

When the segment is complete, the drill string is disconnected from the core sample truck and is capped. The core sampler truck platform is rotated to align and connect the shielded receiving vessel (shielded receiver) with the drill string. During the connection the air pathway is protected by closed valves on the shielded receiver and on the adapter on the end of the drill string.

When the sampler is removed from the tank, it is placed directly into the shielded receiver without disturbing the air-tight seal between the shielded receiver and the drill string. The isolation valves on the shielded receiver and the drill string adapter are closed before disconnecting the shielded receiver from the drill string. The truck platform then rotates to place the shielded receiver either directly over a shipping cask, or the shielded receiver may be positioned over an x-ray machine to allow the sampler to be x-rayed. In either case, the sealed drill string remains in place at the tank riser to maintain the seal to

the atmosphere. From the shielded receiver, the sampler is mechanically lowered into a transport cask. Once the sampler is in the transport cask and the shielded receiver has been disconnected, the cask is immediately sealed. While the sampler is being replaced after each segment, with the RMCS System, nitrogen is injected into the drill string at approximately 0.03 cubic meter per minute. This maintains the hydrostatic head in the drill string, minimizing waste from entering the drill string. This also allows for pressurization and depressurization of the shielded receiver, as necessary, for sampler change out. For the PMCS System, water is used to maintain the hydrostatic head. Once a complete core has been obtained, the RMCS truck can be repositioned on the same riser or moved to a different riser on the same tank to obtain additional cores. During RMCS breakdown, the drill string is sleeved as it is removed from the tank and placed into a waste container. When sampling is complete at one tank, the RMCS system will be disconnected and moved to the next tank

2. **Radiological Controls**

a. When opening riser, use ALARACT demonstration controls for "Riser Preparation/Opening" (ALARACT 1)

b. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4)

c. HPT coverage will be performed as specified in the Radiological Work Permit

d. Do not initiate sampling activities if sustained winds are >25 mph. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, provided the reading is taken in an unobstructed location that is representative of the work area. Use of a local device and the measured wind speed readings taken from it must be documented in the Work Record.

e. Valves, caps, and plugs are used to minimize open riser time

f. Core sampler seal in place

g. Threaded connections and/or cam-locks

h. Verify passive or active HEPA filtration on tanks

I. Use approved Containment Selection Guide, Attachment A, from TFC-ESHQ-RP_RWP-C-02, latest revision.

3. **Monitoring**

a. At a minimum, pre and post-job surveys (smears) shall be taken

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. **Records/Documentation**

a. Work package

b. Radiological work permit

c. Radiological survey report(s)

5. **Emission Pathway**

   a. Existing active or passive point sources (Displacement gas is used in drill string which is a closed system and has minimal/no emission impact)

6. **Facility Description**

   a. All SSTs, DSTs and IMUST

ALARACT 3

TANK FARM ALARACT DEMONSTRATION FOR INSTALLATION/OPERATION/REMOVAL OF AUGER SAMPLING EQUIPMENT

1. **Description of Activity/Requirements**

Auger sampling represents one technique to remove a sample from tanks that have less than 25 vertical inches of hardened waste material. The auger sampling assembly uses the auger "bit" to obtain a sample of tank waste. Auger sampling equipment consists of an auger "bit," auger rod, auger sleeving assembly, receiving cask, and an on-site transfer cask (OTC)

To begin, a tank riser is opened and the auger adapter sleeving assembly is installed into the tank headspace. The installation of the auger sleeving assembly reduces open riser time. The auger sleeving assembly provides lateral strength to the auger bit and auger rod, and extends from the riser to the top of the waste surface. The receiver cask is then mounted on top of the auger adapter sleeving assembly via a cam lock fitting. This cam lock fitting seals the receiver cask to the auger adapter assembly that is sealed to the riser, thereby minimizing the open riser time.

The auger rod and auger bit assembly are lowered through the top of the receiver cask assembly, through the interior of the auger sleeving assembly, down to the surface of the tank waste. The portion of the auger rod extending above the riser is then hand rotated forcing the auger bit to penetrate the tank waste. The tank waste material fills the grooves (flutes) of the auger bit and this constitutes the waste sample.

The auger bit (now containing the sample) and auger rod are pulled up from the tank waste surface, through auger sleeving, and into the receiver cask on top of the riser. During this sample removal step, the auger rod exits the top of the receiver cask into the ambient environment. The auger rod is surveyed for contamination as it is extracted and contained if found to be contaminated. When the auger bit (sample) is within the receiver cask, a ball valve, mounted on the bottom of the receiver cask is closed. The receiver cask is then isolated by placing a temporary cover over the auger rod port.

The receiver cask is moved via crane to the OTC. Once the receiver cask has been connected by a cam lock to the OTC, a handle is connected to the auger bit through the top of the receiver cask and the sample is lowered into the cask. The OTC is sealed and then provides a shipping container for the auger sample

2. **Radiological Controls**

a. Follow ALARACT demonstration for "Riser Preparation/Opening" (ALARACT 1)

b. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4)

c. HPT coverage will be performed as specified in the Radiological Work Permit

d. Do not initiate auger sampling if sustained winds are >25 mph. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, provided the reading is taken in an unobstructed location that is representative of the work area. Use of a local device and the measured wind speed readings taken from it must be documented in the Work Record.

e. Use valves, caps, and plugs to minimize open riser time

f. Cam locks used to secure receiving cask to riser and shipping cask

g. Verify passive or active HEPA filtration on tanks

h. Contain contaminated equipment

I. Temporary cover placed on top of receiving cask

j. Sample contained when in shipping cas

3. **Monitoring**
   a. At a minimum, pre and post-job smears (surveys) shall be taken.

   b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual

4. **Records/Documentation**
   a. Work package

   b. Radiological work permit

   c. Radiological survey report(s)

5. **Emission Pathway**
   a. Existing, active or passive point source

6. **Facility Description**
   a. All Tank Farm Facilities

ALARACT 4

TANK FARM ALARACT DEMONSTRATION FOR PACKAGING AND TRANSPORTATION OF WASTE

1. **Description of Activity/Requirements**

   Some materials become contaminated during work conducted within all Tank Farm facilities. Such contaminated materials, which are not released or otherwise controlled, are handled as radioactive waste. Radioactive waste generated from Tank Farms operations activities such as pit work, excavations, surveillances, housekeeping, maintenance and tank sampling, will be double-contained at a minimum. A radiological survey is conducted prior to storage or transportation of the outer-most container to verify that removable contamination meets the requirements under the Radiological Controls section

2. **Radiological Controls**

   a. Follow ALARACT demonstration for "Size Reduction of Waste Equipment for Disposal" (ALARACT 15)

   b. Radiological controls shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual

3. **Monitoring**

   a. At a minimum, pre and post-job surveys (smears) shall be taken

   b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual

4. **Records/Documentation**

   a. Radiological survey report(s)

   b. Radiological work permit

5. **Emission Pathway**

   a. Active or passive, point sources and fugitive source

6. **Facility Description**

   a. All Tank Farm facilities (except special nuclear material in 2718-E)

ALARACT 5

TANK FARM ALARACT DEMONSTRATION SOIL EXCAVATION (using hand tools)

1. **Description of Activity/Requirements**

Soil is routinely excavated in the Tank Farm facilities to support riser preparation, repair and maintenance activities, soil sampling, cleanup of contamination, removal of vegetation and biological hazards, and operational activities (laying conduit or cables for power). An initial survey is performed of the area to be excavated. Surveys are performed throughout the excavation to assure that worker safety and environmental protection is maintained. Once the excavation begins, water is used, as necessary, to prevent the spread of dust. To the extent practicable using hand held instrument field survey techniques, the clean soil is separated from the soil identified as contaminated. The contaminated soil has a fixative applied or is covered by plastic at the end of the shift, and as necessary, to stabilize the contaminated soil. The activities covered by this ALARACT demonstration do not include D&D. All radioactively contaminated soil excavation is conducted using hand tools such as shovels, picks, rakes, etc., and/or an electric demolition hammer with spade attachment. No additional motor operated equipment is allowed.

2. **Radiological Controls**

a. Follow ALARACT demonstration for "Packaging and Transportation of Waste. (ALARACT 4)

b. HPT coverage will be performed as specified in the radiological work permit.

c. A beta-gamma survey of the ground surface is required prior to excavation in Contamination Areas (CA's), High Contamination Areas (HCA's), Soil Contamination Areas (SCA's), and Underground Radioactive Material Areas (URMA's). An alpha survey may be required prior to excavation per the TWR-4675, TFC Radiological Source Term Report Including Technical Basis for Dual Survey Exemption, Revision 4..

d. For excavation in CA's, HCA's, SCA's, and URMA's, if beta-gamma activity greater than 1000 dpm/probe area (5000 dpm/100cm 2) is identified, alpha surveys will also be performed.

e. Suppressants such as water, fixatives, covers, or windscreens will be used as necessary, including at the end of each shift or when sustained or predicted winds are >20mph.

f. Excavation of radioactive material shall not commence if sustained winds are predicted to exceed 20 mph during the work shift.

g. Excavation of radioactive material shall cease if sustained winds exceed 20 mph. A local wind-speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, provided the reading is taken in an unobstructed location that is representative of the work area. Use of a local device and the measured wind-speed readings taken from it must be documented in the Work Record.

h. If the net contamination for the general area is greater than 200 dpm/probe area alpha or greater than 500,000 dpm/probe area beta-gamma, stop work, notify Environmental and Radcon, and implement the controls listed below. Once notifications have been made and the following controls implemented,

excavation may continue:

Soil shall be wetted prior to excavation if not already damp

General area workplace air monitoring shall be performed during excavation activities

Excavation and contaminated soil piles will be covered with plastic, or fixative applied at the end of each shift, and/or as necessary to prevent airborne dust particles

Contaminated soil containing >500,000 dpm per probe area beta-gamma or >200 dpm/probe area alpha will be containerized or covered with clean fill if it is to be left for greater than 48 hours

i. If soil contamination exceeds 20 mrad/hr (open window reading), work will be stopped, Environmental and Radcon notified, and adequacy of controls will be reassessed. WDOH will be notified. Work may continue when approved by Environmental and Radcon with WDOH concurrence.

j. If hot specks are detected during the radiological surveys, the specks will be removed and contained before the activity is allowed to continue unless located in the bottom of the trench after excavation has been completed. Specks found in the bottom of the completed trench may be covered with clean fill. A hot speck will be defined as a very small amount (i.e. less than or equal to 100 cm 2) of contamination reading greater than or equal to 1,000,000 dpm/probe size beta-gamma and/or greater than or equal to 490 dpm/probe size alpha

3. **Monitoring**
   a. At a minimum, pre and post-job surveys shall be made

   b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual

4. **Records/Documentation**
   a. Work package

   b. Radiological work permit

   c. Radiological survey report(s)

5. **Emission Pathway**
   a. Existing passive (fugitive/diffuse)

6. **Facility Description**
   a. All Tank Farm facilities

ALARACT 6

TANK FARM ALARACT DEMONSTRATION FOR PIT ACCESS

1. **Description of Activity/Requirements**

This ALARACT demonstration applies to all pits and filter pits which have the potential for exposing tank waste to the pit environment, except 241-ER-152, 241-S-151, 241-UX-154, 241-TX-154, 244-CR Vault DCRT, 244-A Lift Station DCRT, and 244-TX DCRT. Access to these pits must follow the existing Notice of Construction.

If the work activities are such that they can be performed without removal of pit covers, the controls listed in this ALARACT demonstration do not apply. Instead, the work shall be performed using appropriate controls from HNF-5183 "Tank Farms Radiological Control Manual" and the latest revision of the approved Radiological Containment Selection Guide matrix from TFC-ESHQ-RP_RWP-C-02. Activities which may be conducted in this manner include pit videos/boroscopes, filling seal loops, valve handle change-out, pit wash-downs, fixative application, radiological surveys, remote operation of pit drains, leak detector troubleshooting or changeout, pit drain leak rate tests and removal or insertion of gas sampling lines. Any activity not included in this list must be approved by WDOH on a case-by-case basis.

Pits that do not have the potential for exposing tank waste to the pit environment do not require implementation of ALARACT controls for entry. Examples include flush pits, service pits, annulus pump pits and leak detection pits. These pits shall be accessed using appropriate controls from HNF-5183 "Tank Farms Radiological Control Manual" and the latest revision of the Containment Selection Guide, Attachment A, from TFC-ESHQ-RP_RWP-C-02, latest revision.

PREPARATION WORK: A pre-job survey is performed on the exterior surface of the pit and the surrounding area. For pits that are partially or entirely below grade, a fall protection handrail is installed around the pit. The fall protection is draped in plastic sheeting that extends to the top of the pit. This establishes a splashguard around the pit. Before the pit covers are removed, an approved fixative may be applied inside the pit or the pit may be decontaminated as described below. These processes are generally performed through an access port. If there is no access port(s), the pit covers are raised and suspended, a radiological survey is performed, and/or a fixative may be applied inside the pit as described in Section 2, Radiological Control. The pit covers are removed.

DECONTAMINATION: Uniformly distributed removable contamination levels in the pit are decontaminated to less than 100,000 dpm/100 cm 2 beta/gamma and 2,000 dpm/100 cm 2 alpha by washing or an approved fixative is applied to pit surfaces. A fixative will matrix the contamination to ensure minimization of potential airborne contamination. If a high pressure (up to 3,000 psi) or low pressure (approximately 125 psi) whirly is installed, it is done through an opening (if one exists) in the pit covers and the pit is washed down. The pit covers are lifted and contained if the removable level is greater than 50,000 dpm/100 cm 2 beta/gamma and 70 dpm/100 cm 2 alpha. The pit covers are then moved to a storage area. With the pit covers off, additional decontamination activities may include the use of chemicals, peel and strip paints, water, or manual scrub brushes. When decontamination activities are complete, other work may begin or a temporary cover is installed over the pit.

CLOSURE: After all activities in the pit are completed, the pit covers are reinstalled and the splashguard

is removed

2. **Radiological Controls**

   a. Follow ALARACT demonstration for "Riser Preparation/Opening" (ALARACT 1)

   b. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4)

   c. Uniformly distributed removable contamination levels within the pit are decontaminated so that a swipe reads less than 100,000 dpm/100 cm 2 beta/gamma and 2,000 dpm/100 cm 2 alpha. Alternatively, a fixative may be applied. An approved fixative will be applied to pit surfaces if contamination levels exceed the limits stated above or as needed. Note: The fixative will matrix the contamination to ensure minimization of potential airborne contamination.

   d. Swipes will be taken to determine that splash guards are to be maintained below 50,000 dpm/100 cm 2 beta/gamma and 70 dpm/100 cm 2 alpha.

   e. Use a splashguard extending to the edge of the pit. Splashguard will be taped or sealed to the edge of the pit. If it is not feasible to seal the splashguard to the edge of the pit, an additional rail will be installed at the base of the handrail and the splashguard will be taped or sealed to that bottom rail. This rail will be as close as possible to the pit edge. A ground cover will be placed around the edge of the pit and extending under the bottom rail.

   f. Pit work will not be performed if sustained winds are >25 mph. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, provided the reading is taken in an unobstructed location that is representative of the work area. Use of a local device and the measured wind speed readings taken from it must be documented in the Work Record.

   g. HPT coverage will be performed as specified in the Radiological Work Permit

   h. Use approved Containment Selection Guide, Attachment A, from TFC-ESHQ-RP_RWP-C-02, latest revision.

   i. Active ventilation may be utilized in accordance with the PTRAEU NOC

3. **Monitoring**

   a. At a minimum, pre and post-job surveys (smears) shall be taken.

   b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual

4. **Records/Documentation**

   a. Work package

   b. Radiological work permit

   c. Radiological survey report(s)

5. **Emission Pathway**

   a. Existing passive non-point source

6. Facility Description

a. This ALARACT demonstration applies to all Tank Farm pits except 241-ER-152, 241-S-151, 241-UX-154, 241 TX-154, 244-CR Vault DCRT, 244-A Lift Station DCRT, and 244-TX DCRT

ALARACT 7

TANK FARM ALARACT DEMONSTRATION FOR TANK WASTE GRAB SAMPLING

1. Description of Activity/Requirements

Grab sampling is used to obtain small volume samples of tank waste materials. Individual samples are typically <1 liter, but multiple samples can be taken from the tank. The sampled material consists of liquid, sludges, and solids. Grab sampling techniques are suitable for relatively soft waste. If the waste material is too thick or hard, other sampling techniques (such as core sampling) may be required.

Grab samples are acquired through tank risers. A riser is prepared for grab sampling by first installing a riser adapter called a top hat. The top hat acts as a temporary seal for the open riser to minimize open riser time. The next step is to install a glove bag over the tank riser.

The sampling assembly consists of a sample device suspended on a wire cable. The most commonly used sample devices are a bottle in a weighted bottle holder, and a finger sampler. The bottle is used when the waste material is primarily liquid, while the finger sampler is used to sample relatively solid material.

The sample assembly is placed into the glovebag, the glovebag is closed and the riser is opened. The sample device is lowered with a winch, the waste sample collected, and retrieved from the tank. If the collected sample is a bottle, the bottled is capped, bagged and placed into a shielded container. If the sample is collected in a finger sampler, the waste is transferred to a secondary container, bagged and placed into the shielded container. If the sample is collected in a finger sampler, the waste is transferred to a secondary container, bagged and placed into a shielded container. If a glovebag is used the sample assembly is placed in the glovebag. The glovebag is closed and the riser is opened. If a glovebox is used, the sample assembly is contained in the glovebox. If the sample is collected in a clam shell sampler, it is clipped, removed from the sampler body, transferred to a secondary container, bagged, and placed into the shielded container.

When sampling is finished, the glove bag is collapsed, venting air through a small HEPA type filter, and all contaminated sampling equipment contained inside is disposed as waste. If a glovebox is used, the glovebox is decontaminated, as necessary, and stored for future sampling evolutions. Air from the glovebox is vented through a "paint can" HEPA filter.

A small percentage of grab-sampling jobs are performed on top of a tank riser without a glovebag. An example would be raising a saltwell pump (accessed from within a pit) and sampling between the pump legs and the saltwell screen. Such sample jobs are controlled through work planning utilizing the Containment Selection Guide, Attachment A, from TFC-ESHQ-RP_RWP-C-02, latest revision.

2. Radiological Controls

a. Follow ALARACT demonstration for "Riser Preparation/Opening" (ALARACT 1)

b. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4)

c. Follow ALARACT demonstration for "Pit Access" (ALARACT 6), if applicable

d. HPT coverage will be performed as specified in the Radiological Work Permit

e. Do not initiate sampling if sustained winds are >25 mph. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, provided the reading is taken in an unobstructed location that is representative of the work area. Use of a local device and the measured wind speed readings taken from it must be documented in the Work Record.

f. Use riser adapter to minimize open riser time

g. Samples contained prior to placement in a shielded container

h. Sample contained when in shipping cask

i. Contain contaminated equipment

j. Use approved Containment Selection Guide, Attachment A, from TFC-ESHQ-RP_RWP-C-02, latest revision.

3. **Monitoring**

a. At a minimum, pre and post-job surveys (smears) shall be taken.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual

4. **Records/Documentation**

a. Work package

b. Radiological work permit

c. Radiological survey report(s)

5. **Emission Pathway**

a. Existing active or passive point source

6. **Facility Description**

a. All Tank Farm SST's, DST's and IMUST'

ALARACT 8

TANK FARM ALARACT DEMONSTRATION FOR VAPOR SAMPLING

1. **Description of Activity/Requirements**

Vapor Samples are acquired through risers or other accessible ports such as Standard Hydrogen Monitoring Systems (SHMS) ports, flush ports, or test ports. There are two methods to collect vapor samples from waste tanks: grab sampling (with SUMMA canisters), and In-Situ Vapor Sampling (ISVS or Type IV) equipment. SUMMA is an evacuated container. Other equivalent evacuated containers may be used in its place

SUMMA VAPOR SAMPLING

SUMMA sampling equipment consists of a riser adapter (not used for drill string vapor samples), sample tubing, and SUMMA canisters.

To begin SUMMA sampling through a tank riser, the riser is opened and the riser adapter is installed. The riser adapter contains sampling tubes that extend above the top of the riser and continue down into the tank headspace. The sampling tubes are fitted with isolation valves. An installed riser adapter with the sample tube valve closed isolates the tank vapor space from the ambient environment. To sample through a port, the port is opened, a tube is inserted and an adapter or fitting is installed as appropriate.

In the first step, the sampling tube is purged using portable industrial hygiene instruments and the headspace vapor is drawn into the tube. A tank headspace sample is collected by attaching a SUMMA canister to the top end of a sampling tube and opening the valve. The SUMMA canister, an evacuated container, allows the tank headspace gas to be pulled into the container. The self-contained sample canister is shipped to a laboratory for analysis.

When vapor sampling is finished, the riser adapter/tubing assembly is removed, surveyed by an HPT, and placed into containment sleeving if found contaminated. If a riser is used, a cap or flange is then installed.

TYPE IV VAPOR SAMPLING

The second method of vapor sampling is the In-Situ Vapor sampling (ISVS or Type IV sampling) method. Contrasting SUMMA grab sampling, ISVS sample media is directly exposed to tank vapor gases by placement in the tank headspace. The ISVS sampling equipment consists of a riser adapter, an air pump mounted on a handcart, a manifold for connecting sample tubing, tube bundle assembly which has a sampling head containing the sample and the sample media.

The sampling begins by opening a tank riser designated for sampling; installing the riser adapter; inserting the plastic sleeved sample tubes (with the sampling head/media attached) into the riser to the required sampling depth; attaching the sample tubes to the air pump handcart; sampling for a period of time; removal of the sample lines and sample media; removal of the riser adapter and closing the riser; packaging the samples for shipment to a laboratory; and packaging waste for eventual disposal

2. **Radiological Controls**

a. Follow ALARACT demonstration for "Riser Preparation/Opening" (ALARACT 1)

b. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4)

c. HPT coverage will be performed as specified in the Radiological work permit

d. Minimize open riser and port time

e. Verify passive or active HEPA filtration on tanks

f. HEPA-type filtration in sample line

g. Contain contaminated equipment

h. Sample contained when in shipping containe

3. **Monitoring**
   a. At a minimum, pre and post-job surveys (smears) shall be taken.

   b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual

4. **Records/Documentation**
   a. Work package

   b. Radiological work permit

   c. Radiological survey report(s)

5. **Emission Pathway**
   a. Existing active or passive point source

6. **Facility Description**
   a. All Tank Farm SSTs, DSTs, and IMUST

ALARACT 10

TANK FARM ALARACT DEMONSTRATION FOR WATER LANCING

1. Description of Activity/Requirements

Water lancing the waste in an underground storage tank is performed to determine the depth of the tank from the riser location and to prepare for equipment installation, such as salt well screens, jet pump assemblies and liquid observation wells

There are two types of water lances:

a) A long pipe approximately 7.62 cm in diameter with a single nozzle at the end. This design uses hot water (supplied by a truck) at low pressure, approximately 1034 kilopascals (150 psi). Use of this design may require the lance to be raised and lowered into the waste multiple times so that a large enough hole can be formed in the waste to accommodate the equipment to be installed in the hole.

b) A newer design lance has a 28 cm diameter pipe and multiple nozzles on the bottom to facilitate waste penetration. It is designed to create a large hole with one insertion of the lance into the waste. This design requires less (hot) water volume and operates at higher pressure, 20685 kilopascals (3000 psi).

c) A pipe approximately 7.62 cm in diameter with multiple nozzles on the bottom to facilitate waste penetration. It is designed to create a larger hole with one insertion into the waste. This design uses hot water and operates at a pressure of approximately 20685 kilopascals (3000+/- 20%).

In each case, a hose from a water truck is connected to the top end of the water lance. The water lance is inserted into a tank riser which has a water spray ring mounted within the riser. Additionally, a plastic sleeve is staged and tied off at the top of the lance for deployment during lance retrieval. During insertion of the water lance, air emissions are controlled by the use of the water spray ring. The water spray ring sprays water in the annulus between the outside diameter of the water lance and the inside diameter of the riser. The water lance is lowered until it penetrates the solid portions of the waste that need to be broken up to allow insertion of the saltwell screen or other equipment. The water lance withdrawal steps are the reverse of the insertion sequence. The water spray ring is used to wash radioactive tank waste from the outside of the water lance. Hand wiping of the lance may also take place immediately above the riser and below the plastic sleeving. Washing is repeated until radiation readings are <100 mrem/hr. If the lance cannot be decontaminated below 100 mrem/hr, the lance will be sleeved in plastic, removed from the tank, and stored. The pit or riser will be closed.

Contingency plans within the scope of this ALARACT demonstration are:

a) Removing the lance from the tank for further decontamination by washing, wiping or brushing. The activities will be conducted in accordance with the Containment Selection Guide, Attachment A, from TFC-ESHQ-RP_RWP-C-02, latest revision.

b) Replacement of contaminated parts if they cannot be adequately decontaminated as noted in (a) above. This activity will be conducted in accordance with the Containment Selection Guide, Attachment A, from TFC-ESHQ-RP_RWP-C-02, latest revision.

c) Packaging, storing and transporting the lance "as is" if the external dose rates exceed 100 mrem/hr.

As the water lance is withdrawn from the tank, it is placed inside a plastic sleeve (during the withdrawal process), surveyed, and stored until its next use.

The actual water lancing time (residence time in waste) usually ranges from 10 minutes to 4 hours with an average time of about 30 minutes. Riser open time is minimized

2. **Radiological Controls**

   a. Follow ALARACT demonstration for "Riser Preparation/Opening" (ALARACT 1)

   b. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4)

   c. Follow ALARACT demonstration for "Pit Access" (ALARACT 6), if applicable

   d. Follow ALARACT demonstration for "Packaging and Transportation of Equipment" (ALARACT 12)

   e. During insertion and removal, radionuclide control is achieved by spraying the annulus between the lance outside diameter and riser inside diameter with water

   f. Verify passive or active HEPA filtration on tanks

   g. Use approved Containment Selection Guide, Attachment A, from TFC-ESHQ-RP_RWP-C-02, latest revision.

   h. HPT coverage will be performed as specified in the Radiological Work Permi

3. **Monitoring**

   a. At a minimum, pre and post-job surveys (smears) shall be taken

   b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual

4. **Records/Documentation**

   a. Work package

   b. Radiological work permit

   c. Radiological survey report(s)

5. **Emission Pathway**

   a. Existing active or passive point source

6. **Facility Description**

   a. All Tank Farm SSTs, DSTs, and IMUST

ALARACT 11

TANK FARM ALARACT DEMONSTRATION FOR WASTE TRANSFERS

1. **Description of Activity/Requirements**

   Wastes are transferred to, from, and within actively ventilated tank farm storage facilities (i.e. double-shell tanks), chemical processing facilities, receiver vaults, mobile tanks, and evaporators. Wastes are also transferred from single-shell tanks during (and due to) salt well pumping. Transfers are made through a network of existing or to be installed above or below ground pipelines, and operating equipment. Transfers also utilize the existing network of controls or transfer structures (currently in use, or constructed under a Notice of Construction) such as diversion boxes, valve pits, double contained receiver tanks, and diverter stations. Jet, submersible, or transfer pumps are used to transfer waste at flow rates up to 300 gallons (1,132 liters) per minute. The pit covers are reinstalled on the pits before starting any waste transfer operation. Occasionally, water is added to a tank or transfer system to prevent or remove plugs. Other techniques to free blockages include chemical flushing, pressurization, temporary jumpers, hydraulic scouring, and the use of heat tracing. Flow rates and pressures used are determined by engineering evaluations. Flow into the sending/receiving tank is exhausted using a HEPA filtered vent

2. **Radiological Controls**

   a. Verify HEPA filtration on receiving tanks

   b. Follow ALARACT demonstration for "Riser Preparation/Opening" (ALARACT 1)

   c. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4)

   d. Follow ALARACT demonstration for "Pit Access" (ALARACT 6)

   e. Follow ALARACT demonstration for "Packaging and Transportation of Equipment and Vehicles" (ALARACT 12)

   f. Follow ALARACT demonstration for "Installation and Removal of Equipment from Tanks" (ALARACT 13)

   g. Follow ALARACT demonstration for "Pit Work" (ALARACT 14)

3. **Monitoring**

   a. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual

   b. Radiological surveys of the work area as required by the work package and/or procedure

   c. Post job survey(s)

4. **Records/Documentation**

   a. Flow rate and pressure engineering evaluations

b. Work package and/or Procedures

c. Radiological work permit

d. Radiological survey report(s)

5. **Emission Pathway**
   a. Existing active Tank Farm passive point sources or fugitive non-point source

6. **Facility Description**
   a. All Tank Farm Facilities

ALARACT 12

TANK FARM ALARACT DEMONSTRATION FOR PACKAGING AND TRANSPORTATION OF EQUIPMENT & VEHICLES

1. **Description of Activity/Requirements**

   Equipment and vehicles that become contaminated during work activities are reused when possible. If the equipment or vehicle is to be reused or stored in a contamination area, the removable activity levels on the surface of the item, or the outer-most container, must be in accordance with the latest revision of HNF-5183, "Tank Farms Radiological Control Manual.

2. **Radiological Controls**

   a. Radiological controls shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual

3. **Monitoring**

   a. At a minimum, pre and post-job surveys (smears) shall be taken

   b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual

4. **Records/Documentation**

   a. Radiological work permit

   b. Radiological survey report(s)

5. **Emission Pathway**

   a. Fugitive/diffuse source

6. **Facility Description**

   a. All Tank Farm facilities

ALARACT 13

TANK FARM ALARACT DEMONSTRATION FOR INSTALLATION, OPERATION, AND REMOVAL OF TANK EQUIPMENT

1. **Description of Activity/Requirements**

This ALARACT demonstration does not provide approval for the following activities: waste sampling, sluicing, lancing, and operations of mixer pumps. While operating under these activities, the applicable ALARACT demonstrations must be complied with.

A multitude of equipment may be installed, operated, and removed from tanks (actively and passively ventilated) and cascade of transfer lines. For purposes of this ALARACT, the term equipment covers any expanding foam or other types of material added to a cascade or transfer line to plug the line and preclude waste or water movement necessary for interim isolation of a tank.

When installing and removing equipment from tanks, risers and pits are opened. ALARACT 1 (Riser Preparation/Opening) and ALARACT 6 (Pit Access) describe the activities necessary to prepare the risers and pits.

If water lancing is performed to assist in the installation of equipment, it will be done in accordance with ALARACT 10 (Water Lancing)

Equipment is lowered into and removed from tanks either manually or remotely (e.g. using a crane). Once the equipment is installed, mating surfaces of the equipment and riser are sealed.

All equipment removed from tanks is contained using glovebags, sleeving, or other containment devices in accordance with the latest revision of the Containment Selection Guide, Attachment A, from TFC-ESHQ-RP_RWP-C-02, latest revision.

The riser is closed under ALARACT 1 (Riser Preparation/Opening) and the pit is closed under ALARACT 6 (Pit Access) following installation or removal of equipment.

Waste is packaged and transported per ALARACT 4 (Packaging and Transportation of Waste). Equipment is packaged and transported per ALARACT 12 (Packaging and Transportation of Equipment and Vehicles)

2. **Radiological Controls**

a. Follow ALARACT demonstration for "Riser Preparation/Opening" (ALARACT 1)

b. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4)

c. Follow ALARACT demonstration for "Pit Access" (ALARACT 6)

d. Follow ALARACT demonstration for "Water Lancing" (ALARACT 10)

e. Follow ALARACT demonstration for "Packaging and Transportation of Equipment and Vehicles" (ALARACT 12)

f. Follow ALARACT demonstration for "Size Reduction of Waste Equipment for Disposal" (ALARACT 15)

g. Equipment is decontaminated or contained when removed from tanks when >50,000 dpm/100cm2 beta/gamma and/or 70 dpm/100 cm2 alpha.

h. Swipes will be taken to determine that the surface of the item or the outermost surface of the container are maintained <50,000 dpm/100 cm 2 beta/gama and/or <70 dpm/100 cm2 alpha

i. HPT coverage will be performed as specified in the Radiological Work Permit

j. Do not install or remove equipment if sustained winds are >25 mph. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, provided the reading is taken in an unobstructed location that is representative of the work area. Use of a local device and the measured wind speed readings taken from it must be documented in the Work Record.

k. Use approved Containment Selection Guide, Attachment A, from TFC-ESHQ-RP_RWP-C-02, latest revision.

3. **Monitoring**
   a. At a minimum, pre and post-job surveys (smears) shall be taken

   b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual

4. **Records/Documentation**
   a. Work package

   b. Radiological work permit

   c. Radiological survey report(s)

5. **Emission Pathway**
   a. Active or passive, point sources and fugitive source

6. **Facility Description**
   a. All Tank Farm facilities

ALARACT 14

TANK FARM ALARACT DEMONSTRATION FOR PIT WORK This ALARACT demonstration applies to all pits except 241-ER-152, 241-S-151, 241-UX-154, 241-TX-154, 244-CR Vault DCRT, 244-A Lift Station DCRT, and 244-TX DCRT.

1. **Description of Activity/Requirements**

When entering or exiting the pit, ALARACT 6 "Pit Access" must be complied with.

All equipment removed from the pit is decontaminated or contained. A temporary or permanent cover is placed over the pit if ever left unattended.

Installing pit leak detectors, unplugging drains, and housekeeping/waste removal activities are performed following the above description

Specific activities performed in pits follows:

(NOTE: the "Pit Viper" may be used for any of the following activities as long as the appropriate controls, indentified below, are implemented.)

Jumper Work

Before any jumper work takes place, the affected lines are flushed (if possible) and an approved fixative is applied. The fixative will be applied in accordance with ALARACT 6 "Pit Access" and reapplied as necessary.

Swipes of the splash guard will be taken during the jumper work. If a used jumper is to be removed from the pit, it is drained and a fixative is applied. If removable contamination is greater than 50,000 dpm/100 cm 2 beta/gamma and/or 70 dpm/100 cm 2 alpha, the jumper will be contained and/or decontaminated.

If jumpers are cut, they are cut by hydraulic shears or a portable band saw within the pit. The pieces are contained before they are removed from the pit.

Pressure Testing Lines

A pressure test assembly is installed on the line to be tested in one pit. A blank with a drain is installed on the other end of the line in a separate pit. Temporary and/or permanent covers are placed over the pits during the pressure test

2. **Radiological Controls**

a. Follow ALARACT demonstration for "Riser Preparation/Opening" (ALARACT 1)

b. Follow ALARACT demonstration for "Packaging and Transportation of Waste"

(ALARACT 4)

c. Follow ALARACT demonstration for "Pit Access" (ALARACT 6)

d. Follow ALARACT demonstration for "Packaging and Transportation of Equipment and Vehicles" (ALARACT 12)

e. A splashguard will extend to the edge of the pit where it is taped or sealed. If it is not feasible to seal the splashguard to the edge of the pit, an additional rail will be installed at the base of the handrail and the splashguard will be taped or sealed to that bottom rail. This rail will be as close as possible to the pit edge. A ground cover will be placed around the edge of the pit and extending under the bottom rail.

f. Swipes will be taken to determine that splash guards are maintained below 50,000 dpm/100 cm ^2 beta/gamma and 70 dpm/100 cm ^2 alpha

g. Uniformly distributed removable contamination levels within the pit are decontaminated so that a swipe reads less than 100,000 dpm/100 cm ^2 beta/gamma and 2,000 dpm/100 cm ^2 alpha. An approved fixative will be applied to pit surfaces if contamination levels exceed the limits stated above or as needed.

Note: The fixative will matrix the contamination to ensure minimization of potential airborne contamination.

h. If a used jumper is to be removed from the pit, it is drained and a fixative is applied. If removable contamination is greater than 50,000 dpm/100 cm ^2 beta/gamma and/or 70 dpm/100 cm ^2 alpha, the jumper will be contained and/or decontaminated.

i. A temporary or permanent cover is placed over the pit if the pit is ever left unattended

j. Pit work will not be performed if sustained winds are >25 mph. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, provided the reading is taken in an unobstructed location that is representative of the work area. Use of a local device and the measured wind speed readings taken from it must be documented in the Work Record.

k. HPT coverage will be performed as specified in the Radiological Work Permit

3. Monitoring

a. At a minimum, pre and post-job surveys (smears) shall be taken

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual

4. Records/Documentation

a. Work package

b. Radiological work permit

c. Radiological survey report(s)

5. Emission Pathway

a. Existing passive non-point source

6. Facility Description

a. This ALARACT demonstration applies to all Tank Farm pits except 241-ER-152, 241-S-151, 241-UX-154, 241-TX-154, 244-CR Vault DCRT, 244-A Lift Station DCRT, and 244-TX DCRT

ALARACT 15

TANK FARM ALARACT DEMONSTRATION FOR SIZE REDUCTION OF WASTE EQUIPMENT FOR DISPOSAL

1. **Description of Activity/Requirements**

   Size reducing, cutting or disassembling contaminated material and equipment is done for more economical waste packaging. Containment devices are employed as applicable per the Containment Selection Guide, Attachment A, from TFC-ESHQ-RP_RWP-C-02, latest revision. The process is limited to mechanical cutting techniques such as low speed and high speed sawing, snipping, shearing, as well as hot work such as cutting torches. The process will also include bending, crimping, and compaction to preclude the need for cutting operations.

   Examples of items cut up or disassembled for waste disposal during facility operations include long-length contaminated equipment (i.e. waste tank level instrumentation, thermocouple trees, specific gravity probes, observation ports, hose and piping), waste sampling equipment (i.e. drill strings or augers), pumps, compressors, and deactivated exhausters with associated ductwork. This includes replacement and disposal of flexible ventilation ductwork located upstream of HEPA filtration

2. **Radiological Controls**

   a. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4)

   b. Equipment with removable contamination will be contained per the Containment Selection Guide, Attachment A, from TFC-ESHQ-RP_RWP-C-02, latest revision, or decontaminated.

   c. HPT coverage as specified in the Radiological Work Permit

3. **Monitoring**

   a. At a minimum, pre and post-job surveys (smears) shall be taken

   b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual

4. **Records/Documentation**

   a. Radiological work permit

   b. Radiological survey report(s)

5. **Emission Pathway**

   a. Active or passive, point sources and fugitive source

6. **Facility Description**

   a. All Tank Farm Facilities

ALARACT 16

TANK FARM ALARACT DEMONSTRATION FOR WORK ON POTENTIALLY CONTAMINATED VENTILATION SYSTEM COMPONENTS

1. **Description of Activity/Requirements**

   Scope will include work on potentially contaminated ventilation system components. This may include repair or replacement of ductwork, dampers, valves, recirculation fans, flexible boots, heaters, instrumentation, or other ventilation system components.

   The process will be performed using mechanical techniques such as unbolting, drilling, snipping, shearing, cutting, abrading, or low and high-speed sawing, as well as hot work such as cutting torches. Other activities may include installation of instrumentation, test ports, or sample ports. Containment devices are employed as applicable per the Containment Selection Guide, Attachment A, from TFC-ESHQ-RP_RWP-C-02, latest revision. .

   If exhaust systems are replaced under the "replacement-in-kind" provisions of WAC 246-247 utilizing this ALARACT demonstration, then the abatement controls of the new system must be equivalent or better than those of the system that is replaced. The operational flow rate of the new system may not exceed that of the replaced system

2. **Radiological Controls**

   a. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4)

   b. Work with removable contamination will be contained per the latest revision of the Containment Selection Guide, Attachment A, from TFC-ESHQ-RP_RWP-C-02, latest revision.

   c. HPT coverage as specified in the Radiological Work Permit

3. **Monitoring**

   a. At a minimum, pre and post-job survey (smears) shall be taken

   b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual

4. **Records/Documentation**

   a. Radiological work permit

   b. Radiological survey report(s)

5. **Emission Pathway**

   a. Active and passive, point sources and fugitive source

6. **Facility Description**

   a. All Tank Farm Facilities

ALARACT 18

ENVIRONMENTAL RESTORATION PROGRAM
ALARACT DEMONSTRATION FOR DRILLING

1. Description of Activity/Requirements

Drilling, outside of the Tank Farms fence line, is conducted to meet multiple needs on the Hanford Site. These include, but are not limited to, the installation of groundwater monitoring wells, extraction wells, injection wells, vadose zone characterization, aquifer/river sampling tubes, etc. The drilling methods currently used include cable tool, sonic, air rotary, diesel hammer direct push, and mud rotary technologies as described in Appendix 1. In some cases, more than one method (e.g. air rotary and cable tool) may be used to complete a boring. All drilling and well decommissioning activities are conducted in compliance with WAC 173-160.

The drilling process generates wastes, such as soil cuttings, purge water, decontamination fluids and other wastes that are managed in accordance with applicable regulations and contractor procedures. Soil and/or groundwater samples may be taken during the drilling process. Upon reaching the desired total depth, some borings are completed as groundwater monitoring wells. Groundwater wells and borings that have no further intended purpose are decommissioned.

The drilling and sampling equipment is cleaned between borings to prevent cross contamination. Equipment cleaning techniques for push technologies include wiping/scrubbing with clean paper towels and/or rags, and may be followed by a 3 bucket wash. These methods are used to remove smearable contamination prior to transporting the equipment to another location. These methods are also used for the other drilling techniques. High temperature and pressure (180 °F and 1000 psi) washing at a decontamination pad is necessary as a final cleaning step for some drilling equipment.

Abrasive decontamination methods are sometimes needed to remove small isolated areas of fixed contamination after all smearable contamination has been eliminated. It may consist of scrubbing the contaminated area with a wire brush (or other mechanical means) using an approved cleaner, or removing a thin layer of metal using a metal file and/or sandpaper.

The following is a description of drilling techniques that may be utilized in areas outside the Tank Farms fence line.

Cable Tool Drilling:

A temporary drive casing and cuttings drive barrel is driven into the soil by mechanical means at ground surface. The outer drive casing prevents caving of the formations penetrated as the hole is advanced. Once filled, the barrel is withdrawn to the surface and the cuttings are emptied from the barrel into an appropriate waste container, or to ground surface, depending on environmental and health risk determination. "Hard tool" cable tool drilling is used in difficult to penetrate formations. In this case, water is added to form a slurry at the bottom of the hole to facilitate cuttings removal by means of a wireline bailer. With either method, if contamination levels of concern are present, the cuttings are placed in a containment drum for appropriate disposal. This process is repeated until the drive casing reaches the desired depth. The inner barrel is then withdrawn, and the drive casing is incrementally pulled back to the surface as well completion components are installed, or plug back materials are placed

if the hole is decommissioned.

Sonic Drilling:

This drilling method consists of a drive casing and may include an inner cuttings barrel system. A vibration is induced in the drive casing system and it is mechanically pushed into the formation. As the system advances, formation materials are compressed as the tool advances. If sampling is desired, an inner sample barrel can be installed to capture a sample of the material penetrated. Excess material is compressed outside the drive casing. The drive casing/inner barrel assembly is advanced incrementally to obtain a sample, the inner barrel is withdrawn, and the cuttings are contained or discarded, as described above. This process is repeated until the drive casing reaches the desired depth. Boring completion or decommissioning is similar to the cable tool method.

Direct Push Technologies:

Push technology is conducted on the Hanford site using cone penetrometers, Geoprobes™ , and hand driving techniques. The Geoprobe and cone penetrometers utilize hydraulics to push small diameter rods (1" to 3") into the formation by using the weight of the heavy truck as resistance. The system minimizes contaminant exposure since there are no drill cuttings or exhaust air as the hole is advanced. An instrumented real-time sensor can be used on the cone penetrometer to obtain formation parameters as it is being pushed, and a detachable (pull-back) shoe can be opened to obtain formation or groundwater samples by means of a retrievable inner wire-line tool. Limited geophysical logging can also be conducted in these holes using very small diameter tools compatible with steel casing. Hand driving for aquifer tube installation uses sledges, portable jackhammers, etc., to mechanically drive ~1" diameter rods to very shallow depths (<30 ft). A miniature screen with attached polyethylene tubing is placed in the hand driven holes prior to withdrawing the rod. The Geoprobe is sometimes used to support aquifer tube installations, and sonic technology can be used to assist small diameter cone penetrometer rod penetration.

Air Rotary Drilling:

This drilling method consists of a dual-wall casing, assembly consisting of an outer drive casing and an inner rotary drill stem and bit assembly. The outer drive casing is driven from ground surface, or hydraulically pushed down, as the inner rotary assembly advances into the formation. Air is injected through the inner drill stem/bit and flushes the cuttings up the drive casing/drill stem annulus. Cuttings are handled as above. Advancing the boring is generally continuous since cuttings are removed as the boring is advanced. Water may be added to the air stream to assist in lifting the cuttings and to minimize dust emissions. Return air is put through cyclone separators to remove solids and minimize dust. This process is repeated until the drive casing reaches the desired depth. Boring completion or decommissioning is similar to the cable tool method.

Diesel Hammer Drilling:

The drive casing in this drilling method is advanced using a diesel hammer technique. Drill cuttings are removed using an inner core barrel on a wire-line system. Cuttings are handled as above. This process is repeated until the drive casing reaches the desired depth. Boring completion or decommissioning is similar to the cable tool method.

Mud Rotary Drilling:

Mud rotary drilling is a drilling method that involves the continuous circulation of fluids (commonly referred to a drilling mud) in the borehole as the drill bit is advanced. There are two methods where drilling fluids are used: 1) direct rotary and 2) reverse circulation rotary. With either method, the drilling mud is circulated from the surface to the bottom of the borehole and into a pit collection system at the surface. The drilling method itself involves the rotation of a bit attached to a drill string with downward applied weight or pressure to advance the borehole. The method is similar to Air Rotary drilling discussed above, except that a fluid is circulated instead of air. The essential functions of a drilling mud are to:

1) Lift the formation cuttings from the bottom of the hole to the surface and carry them to a settling tank.
2) Seal the borehole wall to reduce mud loss to the formation.
3) Cool and clean the drilling bit.
4) Lubricate the drilling bit, bearings, mud pump and drill pipe.
5) Allow drill cuttings to be easily removed through solids control.
6) Clean the bottom of the hole.
7) Aid in formation evaluation.
8) Aid in formation stability.

The drilling mud requires constant monitoring and conditioning to ensure required mud properties are maintained to meet the above functions.

The drilling mud and drill cuttings are disposed of as appropriate either in an approved disposal facility, or to ground surface, depending on environmental and health risk determination. Borehole completion or decommissioning is similar to the cable tool method.

2. Radiological Controls

a. Contractor radiological, waste management, sampling, decontamination, drilling, decommissioning, transportation, and health and safety procedures are followed.

b. A Radiological Risk Assessment is conducted prior to, and for, each prospective drilling location. A Radiological Risk Assessment Checklist is completed, and a Hanford Site Excavation Permit is completed and approved. A Radiological Work
Permit (RWP) is completed for all High Risk intervals to be drilled.

c. A ranking system is used at each drilling location (and the intervals within, as appropriate) of Low, Medium, or High Risk. It is important to note that different depth intervals may have different risk levels in the same well. Controls are upgraded and downgraded according to the interval exposed during the drilling process.

d. Controls are based on risk level and the site-specific drilling location.

High Risk borings (e.g., those located in a crib, pond or ditch) are drilled using methods that have the least potential for air releases (i.e., not air rotary). The equipment is wiped clean as it is brought out of the boring. Core barrel samples are contained in plastic sleeves and the bottom tied off. The sleeves and drill cuttings are placed into appropriate containers for analysis and/or disposal. Continuous radiological control technician (RCT) coverage is provided for the duration of the High Risk drilling. The RWP

identifies radiological conditions, establishes worker protection and monitoring requirements, and contains specific approvals for radiological work activities. When characterizing highly contaminated waste sites a HEPA ventilated glove bag or enclosure is used to obtain samples of the cuttings.

Medium Risk borings (e.g., those located within 50 feet of a crib, pond or ditch) are evaluated on a case-by-case basis and controls depend on site-specific factors. In most cases, the boring is drilled in a conservative manner using methods that have the least potential for air releases (i.e., not air rotary). Continuous RCT coverage is provided. If radioactivity is detected, the work is immediately stopped, and the boring is upgraded to High Risk with appropriate controls in place prior to proceeding.

Low Risk borings (balance of the Hanford site) may be drilled with any of the methods described in Appendix 1. If using air rotary techniques, water may be added to minimize dust and assist in cuttings removal. RCT surveys are conducted either every morning or afternoon to verify the absence of contamination. If radioactivity is detected, the work is immediately stopped, and the boring is upgraded to High Risk with appropriate controls in place prior to proceeding.

Drilling equipment is checked for contamination prior to moving it to a new location. Smearable contamination is removed by the manual methods discussed earlier. It is sometimes necessary to apply a fixative or to wrap the area to prevent the spread of contamination that is not easily washed or wiped off. High temperature and pressure (180 °F and 1000 psi) washing is necessary as a final cleaning step for some drilling equipment.

3. **Monitoring**

Air monitoring is required for drilling in High Risk intervals. Existing near-facility air monitoring stations will be utilized when possible. If existing near-facility air monitoring stations do not provide adequate coverage for the predominate wind direction, additional monitoring will be conducted.

4. **Records/Documentation**

a. Radiological Work Permit, if applicable.

b. Analytical results from the near-facility air monitoring station.

c. Notify the WDOH of all drilling locations prior to initiating field activities and in the event that unanticipated contamination is encountered.

5. **Emission Pathway**

a. Potential fugitive emissions

6. **Facility Description**

a. Hanford Site outside of the Tank Farms fence line

ALARACT 26

DISPOSAL BY BURNING OF POTENTIALLY CONTAMINATED TUMBLEWEEDS

1. **Description of Activity/Requirements**

   Windblown collections of tumbleweeds along fence lines, buildings, and other locations must be removed for purposes involving safety and security. Due to the volume and makeup of these collections, the only reasonable option for large-scale disposal is collection followed by controlled burning outdoors.

   Some burns are conducted near the collection point while others are conducted in designated central locations which receive compacted, shredded, or pitched loads of the weeds during various times of the year. Due to their being an opportunistic invader species with deep roots, there are very infrequent occasions where the weeds may grow in areas with contaminated soil, and uptake low levels of radioactive contamination. This ALARACT demonstration provides the description of radiological controls and monitoring that will be performed in taking reasonable precautions during disposal of the weeds by open burning.

2. **Radiological Controls**

   If collected in areas, which may reasonably provide some potential for incurring contaminated windblown tumbleweeds, collection of the windblown weeds includes radiological, field surveys using hand held instruments. The surveys are conducted of each weed upon their first being handled. Handling may involve loading for transport, compacting, shredding, piling for disposal, or other manual methods.

   If the weeds prepared for burning have been in place for longer than one week, additional field surveys will be conducted around the perimeter of the burn pile to assure no detectable windblown contamination has settled in the burn area. This precaution is taken even though it is known only a very few locations might be impacted by windblown contamination. Any detected contamination will be removed prior to burning.

   The burning will not occur in any area posted as containing radioactive contamination.

   The burning will be conducted under an approved Hanford Fire burn plan, and with constant job coverage by Hanford Fire personnel and equipment.

   Note: If radioactive contamination is found after the burn, DOH will be notified.

3. **Monitoring**

   Monitoring will consist of the radiological field surveys conducted as part of the activities described above.

4. **Records/Documentation**

   Tumbleweeds collected from areas with a reasonable potential for contamination are surveyed using hand held instruments. The surveys are conducted of each weed upon their first being handled.

   Surveys are documented on Radiological Survey Reports, reviewed, and retained with HSO Radiological Control Organization at MO 406 according to Department of Energy requirements.

The burning will be conducted under Special Prescribed Fire Proposal - Hanford Site Designated Safe Areas # FH-0201185.

5. **Emission Pathway**
   Emission from the proposed burn will be a diffuse emission.

6. **Facility Description**
   The Waste Information Data System site 200-W BP (also known as 200-W Burning Pit, Pit 34).

ALARACT 28

SHUTDOWN OF STACK SYSTEM(s) (Maintenance and incidental)

1. **Description of Activity/Requirements**

The listed facilities are currently under Surveillance and Maintenance (S&M) status, meaning active processing has ceased with radioactive feed materials no longer brought in. Surveillances and maintenance activities are performed in these facilities including, but not limited to minor activities such as exterior and interior inspections; checking for door security, for any unauthorized building intrusions, and for structural integrity; water intrusion cleanup; waste handling/removal; maintaining radiological airborne control zones; animal or insect intrusion abatement; maintaining operating systems and building integrity, eliminating utilities when possible; identifying and reducing hazards; and housekeeping. The primary ventilation systems and associated record sampling systems operate at each facility as described in the Hanford Site Air Operating Permit.

At certain times to support these various S&M activities, or related to maintenance or replacement-in-kind, any one of these primary ventilation systems may be shut down for a period exceeding two days duration.

The four ventilation systems which may be shut down are: 332 REDOX, 402 B-Plant, 369 PUREX, 310 U-Plant.

2. **Radiological Controls**

It was agreed that an As Low As Reasonably Achievable Control Technology (ALARACT) demonstration is appropriate to address control and monitoring of potential radioactive air emissions during these extended periods of shutdown.

During shutdown periods exceeding two days, the following controls will be implemented:

Inform the Washington Department of Health (WDOH) by telecon or email at the start of each use of this ALARACT action or as soon as it is realized that the systems will be shutdown for more than two days.

To provide assurance that containment of airborne contamination is maintained during the subject periods of shutdown, Fluor Hanford (or successor)
Contractor Radiological Control Technicians (RCTs) will perform daily (during normal work days I.e., not weekends or holidays) radiological swipe
surveys on a representative few normally accessible outer facility doors. If an increase in removable (smearable) contamination is detected at any of
these locations during the period of shutdown, notify the WDOH and describe containment measures to be taken.

During the subject periods of shutdown, to avoid situations which might encourage increased diffuse or fugitive emissions, no activities will be
conducted inside the facility except those approved for unfiltered containment in accordance with established Radiological Control criteria.

If the fans are not restarted within the scheduled time discussed with WDOH, WDOH will be contacted, and continued monitoring and/or airborne controls will be discussed.

3. **Monitoring**
   It was agreed that an As Low As Reasonably Achievable Control Technology (ALARACT) demonstration is appropriate to address control and monitoring of potential radioactive air emissions during these extended periods of shutdown.

4. **Records/Documentation**

5. **Emission Pathway**

6. **Facility Description**

ALARACT 29

242-A EVAPORATOR MAINTENANCE FACILITY SHUTDOWNS

1. **Description of Activity/Requirements**

   Scope will include planned maintenance facility shutdowns at 242-A Evaporator where electrical power to both 296-A-21 and 296-A-22 stacks are de-energized for greater than 24 hours.

   The process of planned maintenance outages and facility upgrades that require de-energizing both the building stack (296-A-21) and vessel vent (296-A-22) for facility upgrades or maintenance will be performed. Building process areas will have the interior doors sealed with tape to help minimize diffuse and fugitive emissions to facility personnel and the outside ambient atmosphere pursuant to meeting WAC 246-247-130 to meet ALARACT compliance demonstration requirements. If entry to process areas is required then radiological controls will be done per HNF-5183 to minimize both time and provide controls for diffuse and fugitive emissions. No facility operational (double shell tank liquid minimization) activities will be performed during the time that neither the 296-A-21 and 296-A-22 stacks are not operating. Radiological containment practices and devices will be employed as applicable per the Containment Selection Guide Attachment A, in TFC-ESHQ-RP_RWP-C-02, latest revision.

2. **Radiological Controls**

   a. Work with removable contamination will be contained per the latest revision of the Containment Selection Guide, Attachment A, in TFC-ESHQ-RP_RWP-C-02, latest revision.

   b. HPT coverage as specified in the Radiological Work Permit.

3. **Monitoring**

   a. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. **Records/Documentation**

   a. Radiological Work Permit.

   b. Radiological survey report(s).

5. **Emission Pathway**

   a. Active and passive, point sources and fugitive sources

6. **Facility Description**

   a. The 242-A Evaporator Facility stacks 296-A-21 and 296-A-22.

ALARACT 30

TANK FARM ALARACT DEMONSTRATION FOR STACK EXTENSION AND PASSIVE EMISSION POINT VENTURI

1. Description of Activity/Requirements

This work is for passively ventilated tank that have a breather filter for filtration that require a stack extension to aid chemical vapors in the work space. These filter attachments will be attached, bolted, flanges attached and welds applied to raise the stack exit height. There is no plan to change the existing breather filter housings other than modification of the downstream and upstream piping simply to aid placement of the stack extension.

The process will be performed using mechanical techniques such as unbolting, drilling, snipping, shearing, cutting, grinding, abrading, or law and high speed sawing, as well as hot works such as cutting torches or welding. Other activities may include installation of instrumentation, test ports, or sample ports. Containment devices are employed as applicable per the Containment Selection Guide Attachment A, in TFC-ESHQ-RP-RWP-C-02, latest revision.

If exhaust systems are replaced under the "replacement-in-kind" provision of WAC 246-247 utilizing this ALARACT demonstration, then the abatement controls of the new system must be equivalent or better than those of the system that is replaced.

2. Radiological Controls

a. Follow ALARACT Demonstration for "Packaging and Transportation of Waste" (ALARACT 4)

b. Follow ALARACT Demonstration for "Size Reduction of Waste Equipment for Disposal" (ALARACT 15)

c. Follow Tank Farm ALARACT Demonstration for "Work on Potentially Contaminated Ventilation System Components" (ALARACT 16)

d. Work with removable contamination will be contained per the latest revision of the Containment Selection Guide, Attachment A in TFC-ESHQ-RP-RWP-C-02, latest revision.

E. HPT coverage as specified in the Radiological Work Permit.

3. Monitoring

a. At a minimum, pre and post-job survey (smears) shall be taken.

B. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. Records/Documentation

a. Radiological Work Permit.

B. Radiological Survey Report(s).

5. **Emission Pathway**
   Active and passive, point source and fugitive sources.

6. **Facility Description**
   All tank farm facilities.

ALARACT 32

Pre-Planned, Temporary Shutdown of Stacks 296-Z-5, 296-Z-6, and 296-Z-7 Unrelated to Exempted Maintenance

1. **Description of Activity/Requirements**

Three ventilation systems which may be shut down are associated with the2736-Z, 2736-ZA, and 2736-B buildings. These buildings are exhausted through licensed stacks 296-Z-5 (Minor Emission Unit Number 389), 296-Z-6 (Minor Emission Unit Number 390) and 296-Z-7 (Major Emission Unit Number 503).

At certain times, to support various activities unrelated to exempted routine maintenance, repair, or replacement of the required emissions control or monitoring systems, any of these primary ventilation systems may be required to be shut down for a period of up to 24 hours. Due to the nature of the material managed within the buildings during non-process operations (e.g., sealed containers), short term (24-hour) lack of active ventilation is not anticipated to result in an unfiltered release of material to the environment. Previous experience at each of these buildings, resulting from unplanned shutdowns has demonstrated that fugitive releases are negligible.

2. **Radiological Controls**

It is agreed that this As Low As Reasonably Achievable Control Technology (ALARACT) demonstration is appropriate to address control of radioactive air emissions during these periods of shutdown.

During the subject shutdown periods, the following controls will be implemented:

1. Process operations in the affected areas will be terminated.
2. Work activities in the affected areas will be minimized.
3. Radiological Control Technicians will perform surveys of normally accessible outer facility doors and other accessible locations where fugitive emissions may occur at least once per shift and/or after restart. NOTE: Outages of less than one shift are typical.

If fugitive/diffuse contamination is detected during the surveys or the required ventilation system cannot be reestablished within the specified time, WDOH will be notified in a timely manner and continued monitoring and/or airborne controls will be discussed

3. **Monitoring**

It is agreed that this ALARACT demonstration is appropriate to address monitoring for potential emissions during these periods of shutdown.

Stack monitoring systems will be assured operable prior to each planned restart of the ventilation system.

The shutdowns will not cause the 296-Z-7 major stack monitoring system to be operated for less than the 80% completeness guideline, per Section 2.2 of the July, 1991 Environmental Protection Agency (EPA) Guidance on Implementing the Radionuclide National Emissions Standards for Hazardous Air Pollutants (NESHAP).

4. **Records/Documentation**

Radiological survey activities will be documented in the associated work package controlling the

activity.

Record of radiological survey for these unplanned shutdowns will be produced upon their being requested by WDOH.

5. **Emission Pathway**

Emissions, if any, would be fugitive emissions from unsealed doors or other unsealed penetrations in the building.

6. **Facility Description**

Refer to NOC Application DOE/RL-2000-42, Revision 3, Radioactive Air Emissions Notice of Construction for Plutonium Finishing Plant Stabilization and Packaging Equipment.